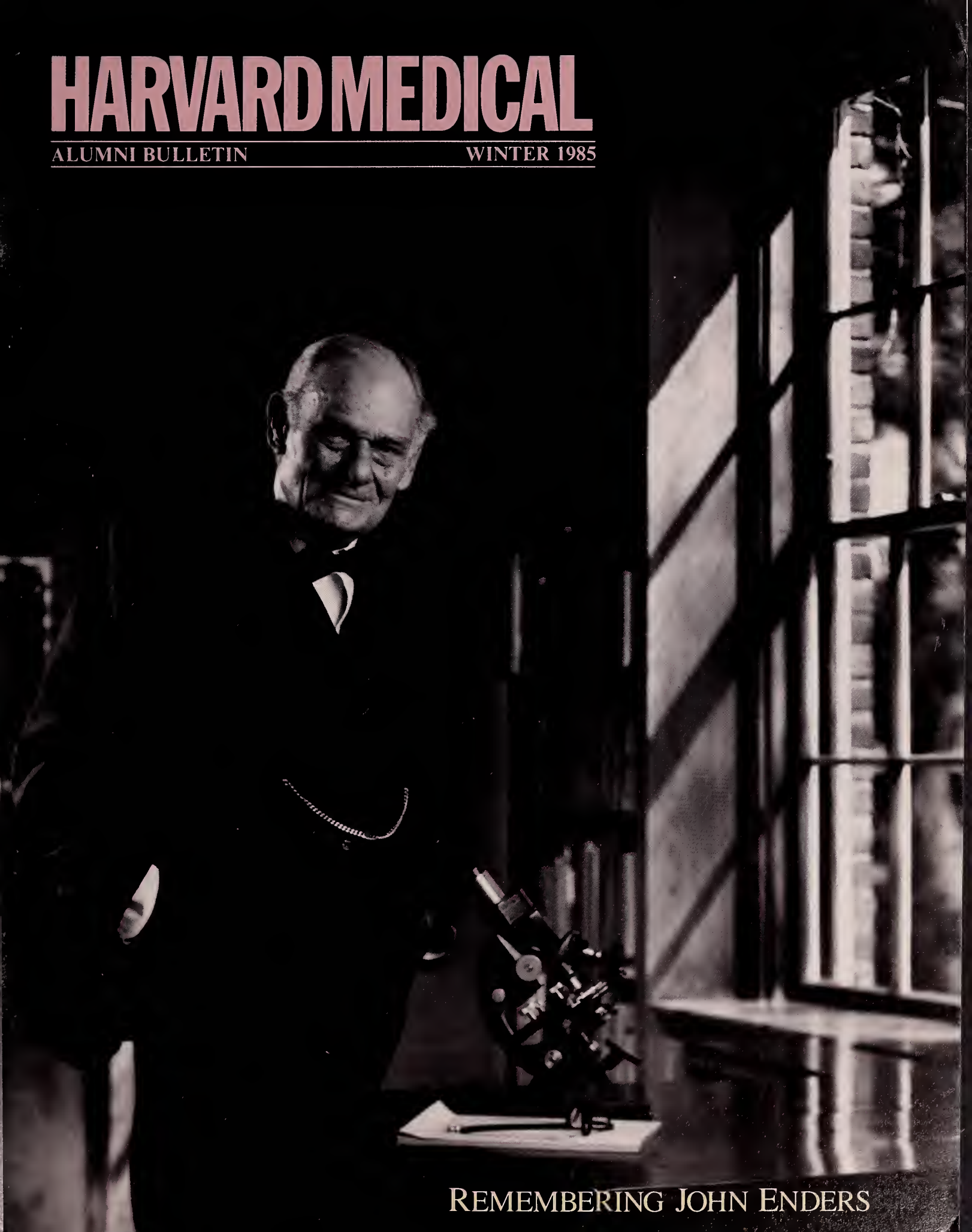
HARVARD MEDICAL

ALUMNI BULLETIN WINTER 1985



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ALUMNI BULLETIN / WINTER 1985 / VOL. 59 NO. 4

FEATURES

DEPARTMENTS

Cover: Photo by Yousuf Karsh

INSIDE H.M.A.B.

This September the medical and scientific community lost John Enders. He died early one evening at his summer home in Connecticut. He had just finished reading T.S. Eliot aloud to his wife. It was time to turn in. The end came quickly. He was 88.

Ordinarily the *Bulletin* would memorialize John Enders with an account of his scientific achievements, his contribution to the health of children everywhere, his international recognition and that of his colleagues, and, of course, his personal qualities. We have chosen to go beyond our usual limits so we can use this attractive, rumpled image of a man to remind us of another age—the men and women who have contributed to Harvard's greatness in the past, and will, in their own style, continue to do so in the future.

This issue, of course, is not all Enders. Mitchell Spellman reports on South Africa; Robert Coles and a group of students discover urban Boston; an unusual student, David Kreger, visits the Soviet Union. Up goes our level of social consciousness.

James FitzGerald, with his skill as a novelist, brings us back to the individual. Yeu-Tsu N. Margaret Lee '61 runs a marathon in Hawaii, and Joseph Placak '33 treats a president's son with Prontosil.

This issue marks the debut of a new column, Bench Marks, created for profiles of the work of our preclinical investigators in the Quadrangle—particularly work that may one day have clinical application. Here assistant editor Lisa Derman reports on John Collier's work on a molecular magic bullet.

An issue to wile away the long winter night.

—J. Gordon Scannell

HARVARD MEDICAL
ALUMNI BULLETIN

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LETTERS

The Way We Were

Facts and Theories

There are two erroneous dates in the introduction to, and body of, my sister's article about our father, Walter B. Cannon, in the Summer 1985 *Bulletin.* (My sister quotes our father as one who insisted on knowing "the facts.")

The date of publication of the first edition of *Bodily Changes in Pain, Hunger, Fear and Rage* was 1915, not 1919! The meeting of the International Physiological Congress was held in Boston in 1929, not 1919.

I make no surmise concerning the source of these errors, but facts are facts and should be recorded accurately.

—Bradford Cannon '33

The Bulletin *regrets the errors, which occurred as we prepared the manuscript for publication.*

I read with great enjoyment and much nostalgia the piece by Mrs. Schlesinger on her father, Walter B. Cannon. Perhaps a brief account of an experience I had with Dr. Cannon might be of interest to readers of the *Bulletin.*

While I was a freshman student in physiology in the department directed by Dr. Cannon, we learned that peptic ulcer is largely a disease of acid and that secretion of gastric acid can be largely diminished by interruption of the vagus nerves. My fallow but fertile mind was stimulated to the idea that perhaps vagus interruption might have some clinical application in the treatment of peptic ulcer disease. Several trips up those marble stairs to the second-floor library in search of information proved fruitless. (Publications in the French literature by Laterjet in the early '20s on this subject may have been there, but went undiscovered.)

The next step was, of course, to seek advice from the professor himself, and I arranged an appointment through his secretary. With great self-confidence, but equal insecurity (contrasting emotions shared, I think, by most medical students, at least in that era), I approached the great man to present my hypothesis. It was an awesome experience. A face-to-face encounter with the George Higginson professor was quite different from listening to his learned lectures in the classroom. (If my similarity in name to the endowed chair in physiology were noted, it evoked no comment.)

The recent Nobel laureate, his countenance glowing rubescent (a result of his early experiments with the roentgen ray), listened attentively as I presented a brief outline of my thoughts. After an interval of consideration, during which time my body water and electrolytes were considerably depleted by overactive sudoriferous glands, he informed me that while the idea sounded somewhat reasonable in theory, he had done some work on this problem in animals back in 1909, and the concept had no practical application.

This pronouncement would have carried no greater finality had it come from the Lord Jehovah himself, and, apologetically, I made a hasty retreat, feeling uncomfortable for having wasted his valuable time. Had I only known that he too had come to the citadel of medical knowledge from a rural and humble background, I might have been encouraged to pursue the discussion, and taken advantage of the opportunity to draw further on his extensive knowledge. Cannon relinquished the Higginson Professorship shortly after our class graduation in 1942.

This episode occurred in 1939. It is well known that in the period shortly following, two surgeons, Walter Dragstedt of Chicago and our own Francis Moore, obtained widespread recognition for their clinical work on vagotomy for peptic ulcer disease. My experience was not a total loss, as I have recounted it many times in my career of teaching and training medical students and surgical residents, cautioning them not to give up an idea just because it is dismissed as useless by someone in authority. "Pursue it further, on the wards, in the clinic, in the laboratory, in the library, and find out for yourself. Great discoveries are often made by young upstarts too stupid to know that it can't be done."

—George A. Higgins Jr. '42

Practicing the Art

I can't help but add a note on Alfred Kranes '30 in response to his obituary in the Summer 1985 *Bulletin.* I knew him only as a classmate; he was always next to me in the lab assignments. He was probably the most outstanding member of our class. In addition, he was a fine person and friend. I think many of us would have liked to stay in Boston as he did. It is said today that medicine needs bolstering of its art (about which Francis Peabody spoke to our class—a classic reprinted recently in *JAMA*) and physicians' compassion. Freddie Kranes provided both.

—John H. Lawrence '30

The following letter is adapted from part of an extended alumni note.

There are moments of sheer terror in the life of every medical student. Occasionally they occur during the care of critically ill patients. My moment did not fall into that category. Instead, it occurred during one of Gordon Scannell's sessions with the surgical clerks in one of the White Building conference rooms in June 1975. Dr. Scannell [the *Bulletin*'s current editor] had the habit of assigning each of us a talk to give and afterward questioning us, to determine

the depth of our knowledge on the subject, on some aspect that more than likely we had not included in our presentation.

My talk was on the function and major surgical diseases of the biliary tree. I thought I did a reasonably good job; I had prepared slides and had handouts for everyone in the group. The presentation went rather smoothly until time came for Scannell's question, which in my case was to describe the array of congenital malformations of the biliary tract of which the surgeon needed to be aware. I clearly remember, for the first time in my life, sensing my adrenals at work. I felt the incredible surge in both flanks as I became tachycardiac and flushed. He asked the question in a way that suggested that I already knew the right answer, rather than in a way that suggested I did not. And I did. I drew the common malformations on the blackboard, and to this day I remember the incredible sense of relief when he rewarded me with a "Fine job."

Moments like that are extremely important. Moments like that are why I look back at my experience at HMS with such a great deal of pleasure. I was challenged to think and perform in a way that boosted rather than diminished my self-confidence. That is just one of the major features that distinguishes HMS from other medical schools in which I have worked. The atmosphere Scannell fostered was one of creative and compassionate competition, not with other members of one's class, but with one's self. That moment has set the stage for many similar moments in my life over the last 10 years. I have always wanted to believe that Dr. Scannell planned it that way.

At the end of the clerkship Dr. Scannell invited my wife and me to his home for cocktails and dinner. He shared with us many of his personal reasons for his career decisions. He told us that one should always strive to contribute at the highest level possible within one's talents, but that the major component of talent was the result of hard work and practice.

Scannell often spoke of compassion and composure in the face of difficult human problems. One case that stands out particularly in my mind was that of a 15-year-old boy with alveolar cell carcinoma of the lung. I asked to participate in the surgery. Scannell happily invited me into the operating room and while we were working, instead of immediately entering into a discussion of the pathophysiology of the disease, he began by discussing the impact of the disease on the 15-year-old patient.

That two-month experience had a major impact on me. I think about it more often than any other single rotation at HMS.

—Woodrow A. Myers Jr. '77

A Star Is Born

Allow me to compliment the *Bulletin* and photographer Jerry Berndt on the excellent cover of the Fall 1985 issue.

Of course it is only coincidental that the graduate is my son Michael holding his daughter Nicole, with his admiring grandparents (my parents) Sophie and Isidore looking on.

—Sol Landzberg

After many years of having my photograph appear in the *Bulletin* only in group pictures at five-year intervals, I was somewhat suprised that in the current issue I appear not only in the class picture but also as first an enthusiastic and then a pensive member of the Alumni Day audience.

I have no objection to this publicity, but it seems a little biased. Does this bias relate to membership in the best medical school class ever? (To those who question this claim I ask, does your class boast two Nobel laureates? I refer of course to the Nobel Prize in Physiology or Medicine, not to the peace prize, which I hope many of us share as members of Physicians for Social Responsibility or International Physicians for the Prevention of Nuclear War.) In any case, the poses are appropriate. The occasion provided much to be enthusiastic about and much to ponder. Many thanks for a great issue, with or without the photos.

—David G. Greene '40

Orlando Hits Home

Here's a round of applause to Fred Orlando '85 for giving a lift to my day with his humorous graduation speech, "No Sleep is a Scary Thing," printed in the Fall 1985 *Bulletin*.

—Pamela Dickmann,
Administrative Associate
Division of Orthopedic Surgery
U. of Louisville School of Medicine

Let me assure Fred Orlando '85 and any readers who may have been misled by his message in "No Sleep is a Scary Thing" that it takes more than saying "sontameters" [centimeters in a French accent], or a Harvard education, to be a star in Texas.

—Donald M. Gross, M.D.C.M.
Department of Pediatrics
U. of Texas Health Science Center at Houston

Amen!!!!

—William R. Risser M.D.
Harvard College '64, Yale '72
Department of Pediatrics
U. of Texas Health Science Center at Houston

Corrections

In the Fall 1985 issue, we mistakenly swapped the photographs of Roger Bulger '60 and Robert Replogle '60. In response to our note of apology, Bulger corrected another error, this one a typing mistake. He did so with such charm we decided to print his letter here.

"Please don't give [the mistaken photo identification] another thought," Bulger wrote us. "Dr. Replogle has for years wanted to trade my body for his, but he refused to trade his brain for mine—thus, you achieved what the best transplanters could not. Actually, I think I came out ahead. I sincerely compliment you for your choice of pictures that accompanied my little essay. It made me feel at least that the audience laughed a little.

"One last note: The author is Ekman, not 'Elkman,' in case some readers ask for a reference on recognizing the dissembler. Thanks again for doing a nice job."

ALUMNI COUNCIL: PRESIDENT'S REPORT

Neither Snow, nor Rain . . .

by Clement A. Hiebert

Hurricane Gloria moaned through the Quadrangle as the Alumni Council hunkered down for a storm-abbreviated meeting on September 27. New members Challoner, Pittman, Ramsey, Roe, and Stoeckle had scarcely been welcomed when Will Cochran relayed Governor Dukakis's order to Boston's citizenry to close shop, buckle up, place tray tables in their full upright and locked positions, assume suitably serious expressions, and go home. With the Blue Hill Observatory reporting gusts to 100 miles per hour, we hung in there just long enough to discuss the recommendations of the nominating committees and to elect the contestants who will vie for council seats in the spring. The council's urge to reproduce itself clearly triumphed over its will to survive.

Organizations, like organs, have a genetic compulsion to replace lost components, and committees tend to spend prodigious energy in sporadic replication rites—a process which is more ongoing and less conspicuous in organs.

A few years ago, when I was invited to run for the council, I didn't know a pentad from a Pentax. The council candidates had always seemed an awesome collection of imminent Nobelists tapped by proteges of Dorothy Murphy and Tom Lanman to help the dean with good ideas while he memorized names of the first-year class or was off seeking money to pave the New Pathway.

I always assumed from the roster of glittering personalities that the right stuff for a council candidate was fluency in Latin, a CV half the weight of the candidate, lofty thoughts on putting Harvard on the right track, and a family plot at Mt. Auburn Cemetary. Given my lack of any of these prerequisites, it was with a mixture of astonishment and delight that I received the news that Harvard was looking Down East for someone to rescue the dean from matters which, had Hurricane Gloria not intervened, I would now lay before you. Instead, I must settle for the elections we set in motion that stormy Friday morning in September.

There are two outside nominating committees: one to suggest officer candidates and the second to present a slate of potential councillors. These groups were formerly called the "committee of three" and the "committee of five," but snide remarks about the "gang of three" prompted adoption of names with a less sinister connotation. Selection of these selectors is done with great care; factors of sex, age, previous service to Harvard, and geography are duly weighed. Months later the nominating committees report to the council and the proffered lists of potential candidates are solemnly scrutinized. Sorting things out used to be a bit of a free-for-all, with vociferous and enthusiastic support by a single admirer occasionally outweighing evidence of a more objective nature. The system worked but was fraught with the potential for cronyism. And it took up an inordinate amount of time.

This year we decided to have the council candidates' names presented in alphabetical order with columns to the right for such information as age, pentad, sex, previous contributions to Harvard, and preference for academia or practice-emia. Following discussion, a secret ballot then decided the order of preference. Subsequently, factors of sex or geography were occasionally allowed to override a close vote in deference to a balanced slate.

On the subject of elections, it should be noted that presidents traditionally alternate between Inner Boston (New England) and Greater Boston (everywhere else). A new pentad is in the offing to redress a deplorable lack of older alumni representatives on the council.

Now what is the council up to besides electing more of its own kind? Saturday morning after the storm may be the place to start. Buttoning up was over. It was time to buckle down. What did we do? We listened to reports. Herewith is an incomplete list:

Dean Tosteson: Faculty continue to distinguish themselves: Folkman and Vallee with angiogenic factors in tumor growth, and Leder and Seidman with insights into gene anatomy. Students now have the classical route to an M.D., a joint road with MIT, or the Oliver Wendell Holmes Society (the New Pathway), which integrates basic and clinical sciences and places emphasis on problem solving.

David Bray, dean for management and administration, unveiled a model of the new teaching center directly across from Vanderbilt Hall by Building E. It will cost approximately $25 million.

Jerry Foster, director of admissions, says the applicant pool is smaller and that the number of females and minorities is decreasing. Students remain hard pressed for funds.

Joe Murray had good and bad news of the Alumni Fund: money is coming in, but only 48 percent of alumni participated last year.

Robert Lawrence, chairman of the Alumni Survey Committee, is administering a questionnaire, now in progress, to ascertain the loyalty of alumni.

Gordon Scannell, editor of the *Bulletin*, summarized the mission of the publication, which is to inform alumni about what is going on at the school and of their own activities and concerns—and illustrated the point with topics from recent issues.

There was spirited discussion by the council, and one came away, as one generally does from a council meeting, feeling that HMS is doing ok, but could do a great deal better if Dean Stone and alumni uncover meg-

adonors for the school's New Pathway, new buildings, new faculty, and new endowment.

Finally, I must share with you news that the January council meeting will be in the form of a "retreat" away from HMS. We are overdue to question our effectiveness as an advisory body to the administration and to take a long look at both the mechanism and agenda of council meetings. Second, we must look at our 7,500 member constituency and see if its expectations of us are fulfilled. Finally, we owe special thought to the student body, which needs our experience and worldly wisdom even as it needs our scholarships.

The council has been partitioned into three committees, each with a chairperson and supporting consultants. We expect the winter meeting to bring forth fresh ideas about how we can better serve the HMS family. You will be hearing about it in the future. □

Clement A. Hiebert '51 is president of the Alumni Council. A full list of council members and their addresses can be found in the Fall 1985 Bulletin.

PULSE

IPPNW Wins Nobel Peace Prize

In December, the Nobel Committee awarded the 1985 Nobel Peace Prize to International Physicians for the Prevention of Nuclear War, for its "considerable service to mankind by spreading authoritative information, and by creating an awareness of the catastrophic consequences of atomic warfare." The committee singled out the group's co-presidents, Bernard Lown, professor of cardiology at Harvard School of Public Health, and Evgueni Chazov, director general of the National Cardiological Research Center of the USSR. Lown is the first Harvard professor to share in the Peace Prize. Several HMS faculty members are IPPNW founders or officers.

PHOTO BY WILLEM DIEPRAAM

Bernard Lown (left) and Evgueni Chazov

IPPNW is a federation of physicians' groups in 41 nations, representing 135,000 physicians worldwide—including 28,000 in the US and 60,000 in the USSR. Dedicated to "mobilizing the influence of the medical profession against the threat of nuclear weapons," IPPNW educates the public on the medical aspects of the nuclear arms race, communicates with government officials throughout the world, and works cooperatively with the United Nations and the World Health Organization. In 1984 it won UNESCO's Peace Education Prize.

IPPNW advocates a verifiable freeze on development and deployment of nuclear weapons, a no-first-use policy by nuclear powers, and "a recognition by governments of the 'illusory nature' of civil defense plans for nuclear war." At its Fifth International Congress, held in Budapest in June, IPPNW called for "a universal moratorium on all nuclear explosions, to remain in effect until the negotiation of a comprehensive test ban treaty."

The concept of IPPNW originated in 1978, when James Muller, then instructor in medicine at HMS (now assistant professor of medicine), "proposed to Dr. Lown the possibility of a Soviet-American physicians' symposium against the arms race," Muller recalls. Lown, who had helped found the American anti-nuclear group Physicians for Social Responsibility in 1961, and who, like Muller, had extensive contact with Soviet physicians through his cardiological research, agreed. He wrote to Chazov, a longtime friend and Brezhnev's personal physician, who responded enthusiastically. IPPNW was founded in December 1980, when Lown, Muller, and Eric Chivian '68 (now lecturer in psychiatry and research associate in the Nuclear Psychology Program at HMS) met in Geneva with Soviet physicians Chazov, Leonid Ilyin, and Mikhail Kuzin.

In October, when the Nobel Peace Prize was announced, IPPNW held a press conference in Vanderbilt Hall with Muller, Chivian, John Pastore (IPPNW secretary and associate professor of medicine at Tufts University School of Medicine), and Sidney Alexander '57, president and cofounder of Physicians for Social Responsibility and head of the Section of Cardiology at the Lahey Clinic. "In a world of threat and counter-

James Muller

threat, this award recognizes the efforts of quiet men and women to save the world from nuclear cataclysm," said Alexander. "Ours is a healing profession, but there is no healing the wounds of nuclear war."

On the eve of the Nobel Prize award ceremonies, in what Lown called "a strange parable" of IPPNW's work, he and Chazov collaborated to save a life. When Soviet television journalist Lev Novikov collapsed from a heart attack during a press conference in Oslo, Norway, Lown and Chazov jumped from the podium. With the help of other cardiologists, they used a defibrillator and injected lidocaine—both methods pioneered by Lown.

"When crisis comes, Soviet and American cardiologists cooperate," said Lown. "We all have to die someday. What we in IPPNW are trying to redress is the danger that we all may die in the same instant."

IPPNW plans to use the $225,000 cash grant that accompanies the prize to help send an international team of physicians on a global speaking tour. □

Newborn Chair Named for Smith

"This is the first chair in neonatology I know of in the world," said Mary Ellen Avery, Thomas Morgan Rotch Professor of Pediatrics, at the formal announcement of the Clement A. Smith Professorship in September. Family, friends, colleagues, and former students gathered at Countway Library to honor Smith, professor of pediatrics emeritus and "one of the founding fathers" of neonatology, as Avery once described him.

Smith's daughters, Gail Smith Biggar, Hilary, and Pamela, initiated the Smith Fund in the 1960s; they and others augmented it to endow the new professorship. "I look at my father with love and pride and deep satisfaction," Mrs. Biggar told the assembled guests. "His mark on the world is now secure with the establishment of this chair."

"It is not so much a single discovery that highlights Dr. Smith's professional career, although many were made in his laboratories," said Avery, one of the many who trained as fellows under Smith, "but rather a sensitivity to the needs of the newborn infants and their mothers, and an appreciation of the opportunity for understanding that could be given to those who took the time to think and to care."

Clement A. Smith

The first pediatrician to serve full-time at an obstetrics hospital (the Boston Hospital for Women, Lying-In Division), Smith is author of the classic *The Physiology of the Newborn Infant*, published in 1945, and a history of Children's Hospital, with which he was affiliated for most of his career. He won the Borden Award of the American Academy of Pediatrics in 1962 for his studies of infant nutrition, and the prestigious Howland Award of the American Pediatric Society in 1976.

Smith's investigations from 1940 through 1965 focused on the basic mechanisms by which infants pass through what he calls "the valley of the shadow of birth." In the early 1940s, he was "a pioneer in respiratory distress syndrome, and also hematological problems," according to John F. Crigler, associate professor of pediatrics.

"Prior to Smith's studies, researchers had studied newborn animals only," agreed Alexander S. Nadas, professor of pediatrics, at the reception. "He brought their observations and the tools of modern physiology to the study of the human newborn."

"Our laboratory pioneered in determining details of intrauterine and extrauterine life, and the adjustment between them," Smith said recently. Before 1940, "there was really no investigation of premature infants in the first few days of their lives," he recalled in a videotaped interview presented at a Leaders in American Medicine program in October. "That wouldn't be safe. The baby was just kept in an incubator and allowed to develop. It was a long time before we began to touch the newborn." □

Honors to Gross and Hendren

In June, Robert E. Gross '31, William E. Ladd Professor of Child Surgery emeritus, doubly celebrated his 80th birthday. Not only did friends, colleagues, and more than 100 of his former residents and fellows gather at a special day-long medical symposium in his honor, but Dean Tosteson announced the formation of the Robert E. Gross Professorship of Pediatric Surgery. W. Hardy Hendren III '52, a former resident under Gross, is the chair's first incumbent.

"Bob Gross has helped create not one, but two fields of surgery," said Tosteson at the symposium. "He is one of the founders of pediatric surgery, and a true pioneer in cardiovascular surgery." Gross served at Chil-

W. Hardy Hendren (left) and Robert Gross

PHOTOS BY SHARON BRAY

dren's Hospital Medical Center for 25 years, first as chief of surgery, then as cardiovascular surgeon-in-chief.

Hendren, who is now chief of surgery at CHMC, has done pioneering work in care for burn patients, surgery for newborns, and reconstructive urology. He recently received the William E. Ladd Medal of the American Academy of Pediatrics and the Ferdinand C. Valentine Medal of the New York Academy of Medicine for outstanding and original contributions to pediatric surgery and pediatric urology.

After being fêted with presentations from 21 of his former trainees and a gala dinner, Gross noted, "I've worked with wonderful people who did superb work. I've been in a lucky spot. There's nothing more satisfying than helping children to be restored to a good life." □

Entrance Examination

"Terrific, as usual," Gerald Foster '51, director of admissions, evaluates the entering Class of '89. This year's freshmen number 166. There are 53 women and 113 men ranging in age from 18 to 35. The class boasts two Rhodes Scholars and one Henry Luce Scholar, thanks in part to the deferred admission option Foster initiated three years ago. It also includes the first members of the Oliver Wendell Holmes Society, now embarking on the New Pathway in General Medical Education.

Once accepted, 72 students indicated a preference for the New Pathway; of these, 24 were selected by a lottery designed to preserve demographic diversity. Eight women and 16 men, including four minorities, now constitute the Holmes Society.

In the entering class as a whole, 28 members are black, Mexican-American, Puerto Rican, or Native American/Alaskan, and eight are alumni offspring. They come from 32 states and four foreign countries (three from Canada, and one each from Ethiopia, Barbados, and Belgium). As usual, New York tops the list of most-represented states, with 31 students; Massachusetts follows with 22, and California is at its heels with 21. Texans number 11, as do New Jersey residents.

Graduates of 71 colleges make up the class. Thirty-one attended Harvard College, while Stanford trails with 13, Brown with 11, and Yale with 9. One hundred twenty-six majored in science, 12 in humanities, and 11 in social science; 13 were double majors.

Applicants were carefully reviewed by the 58 faculty members and 17 students who serve on the Admissions Committee and its five subcommittees. In addition, approximately 30 alumni participated in regional interviews last year. William Shorey '45 organized these alumni volunteers in Chicago, John Griffin '63 in Atlanta, and Ben Chaffey '60, aided by Quentin and Claire Stiles ('55 and '56, respectively), in Los Angeles. The California interviews alternate from L.A. one year to San Francisco the next; this year Sheldon Levin '50 will lead those in San Francisco. (Pat Hoffman from the Education for Health Professions program at University of Texas orchestrates interviews in Austin.)

In addition to the three scholarship winners, nine students entering this year had previously deferred matriculation. One worked for the World Health Organization in Switzerland and another for a biotechnology firm; several completed research projects or studied health-care systems in other countries. This year, 16 of those admitted postponed their entrance to pursue similar projects.

"We've liberalized our admission requirements," says Foster, "emphasizing breadth of education and flexibility in science requirements." For example, HMS now gives some credit for advanced-placement standing resulting from excellence in high school science courses. "We are in no way reducing the importance we place on science," he explains. "We're emphasizing content rather than time."

Foster has been working closely with the Harvard College Chemistry Department, which recently developed alternatives to its traditional year-long organic chemistry course. The plan received overwhelming approval from over 100 medical school admissions departments. "We're trying to improve college preparation for medicine," Foster summarizes, "to get both better science and breadth of education."

Agostini, Mark A.
Williamstown, MA (Amherst)

Aguiar, Eric I.
Gales Ferry, CT (Cornell)

Aklog, Lishan
Addis Ababa, Ethiopia (Harvard)

Alpert, Scott W.
East Northport, NY (Harvard)

Alvarez, Ruben E.
Bakersfield, CA (Stanford)

Amsterdam, Peter B.
Scottsdale, AZ (Stanford)

Arellano, Ronald S.
Montebello, CA (UC San Diego)

Armfield, Richard L., Jr.
Maryville, TN (East Tennessee State U.)

Avila, Diane
Chicago, IL (San Diego State U.)

Bachelder, Gloria P.
Leeds, ME (Bowdoin)

Baer, Margaret L.
Potomac, MD (Yale)

Barfield, Wanda D.
Bridgeport, CT (UC Irvine)

Bell, Douglas S.
Toledo, OH (Case Western Reserve)

Bennett, Genevieve L.
Garden City, NY (Mount Holyoke)

Bernstein, Howard
Montreal, Quebec, Canada (McGill)

Birkmeyer, John D.
Killingworth, CT (Boston College)

Bloomfield, Daniel M.
New York, NY (Haverford)

Bogenschutz, Michael P.
Oklahoma City, OK (Harvard)

Brown, Theodore R.
Sacramento, CA (UC Berkeley)

Bunnell, Craig A.
Lakewood, CO (Colorado College)

Bussey, Onie
Cambridge, MA (Mount Holyoke)

Caravella, BettyAnn
Dix Hills, NY (Fordham)

Carmichael, Elizabeth H.
Troy, MI (Emory)

Carter, William P.
Arlington, MA (Brown)

Cashel, James G.
Lafayette, CA (Stanford)

Chai, Jessie L.
Short Hills, NJ (Johns Hopkins)

Chang, Ching-Yen
Towson, MD (Stanford)

Chen, Catherine C.
West Newton, MA (MIT)

Chen, Edward L.
Houston, TX (Baylor)

Chertow, Glenn M.
Rockville Centre, NY (U. of Pennsylvania)

Clevens, Ross A.
Sherborn, MA (Yale)

Cohen, Douglas S.
New York, NY (Cornell)

Concus, Adriane P.
Kensington, CA (Harvard)

Corcoran, Cheryl M.
Elmont, NY (Harvard)

Cudkowicz, Merit E.
Amherst, NY (MIT)

Dang, Nam H.
Dallas, TX (Harvard)

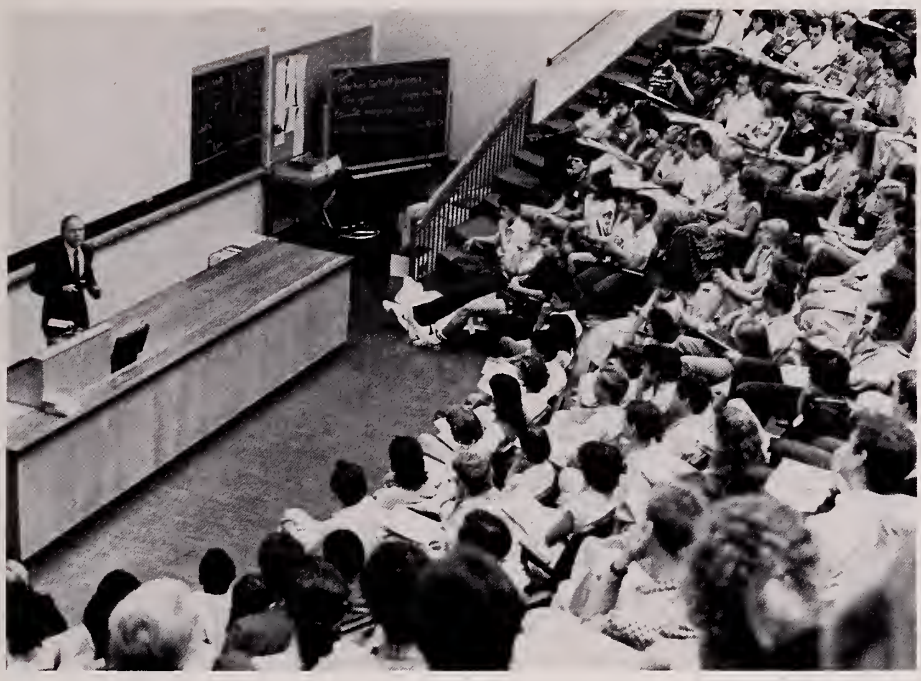

PHOTO BY SUSANNE DAVIS

Daniel, Bruce L.
Shaker Heights, OH (Williams)

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Targeting Toxins

by Lisa Derman

PHOTO BY PAULA CHANDOHA

"Knowledge of diphtheria toxin will permit us to design more effective immunotoxins and better vaccines, and will probably have other benefits, as yet only dimly perceived."

With this issue, we introduce a new column on the work of investigators in Harvard Medical School's preclinical departments. The idea for Bench Marks originated with the Summer 1985 Bulletin's "Profiles in Research," in which we profiled eight scientists. In keeping with the selection process for that article, we are selecting our subjects by contacting department heads for names of faculty members whose work may have clinical implications.

Investigations by John Collier, HMS professor of microbiology and molecular genetics, help harness the deadly power of diphtheria toxin. The toxin, which he calls "a highly sophisticated molecular missile designed during evolution to attack and destroy cells of the host organism," may someday be targeted to kill cancer cells while leaving surrounding cells unharmed. And a new technique called photoaffinity labeling may enable scientists to produce new and better vaccines against a host of diseases.

Collier's ability to manipulate the toxin stems from his early studies of precisely how it kills cells. His thesis project—done in Harvard professor Alwin Pappenheimer's biology lab in the early 1960s—showed that diphtheria toxin blocks protein synthesis within cells. He found that NAD (nicotinamide adenine dinucleotide, an intracellular electron carrier) is involved in this process. As a postdoctoral fellow Collier later discovered that EF-2 (elongation factor 2, a cellular protein necessary for protein synthesis) is the toxin's target within cells.

Diphtheria toxin blocks protein synthesis by catalyzing a reaction called ADP-ribosylation. One part of the NAD molecule—ADP-ribose—attaches to EF-2, inactivating it. Without active EF-2, the cell, unable to produce protein, dies.

"Once you understand this reaction, it immediately raises another question," says Collier, who came to HMS in 1984. "Since both NAD and EF-2 are inside cells, at least part of the toxin molecule must cross the cell membrane. How does it do that?"

The answer still is not known in full. Collier (then at UCLA) and colleagues discovered that two parts of the diphtheria toxin molecule, called the A- and B-chains, control different molecular activities. The B-chain binds to receptors on the cell surface. The whole molecule is then drawn into the cell, where it breaks in two. One of these pieces, the isolated A-chain, enters the cell's cytoplasm and catalyzes ADP-ribosylation, blocking protein synthesis and quickly killing the cell. Oddly, neither chain is dangerous by itself. The A-chain is unable to enter cells without the B-chain; the B-chain alone does not block protein synthesis.

Collier was able to take advan-

tage of the toxin's two-part structure a few years later, when scientists at the Wistar Institute in Philadelphia developed a monoclonal antibody that binds selectively to human colorectal carcinoma cells. Collier and colleagues linked purified diphtheria toxin A-chain to the antibody, forming an immunotoxin. They hoped the antibody would deliver the A-chain selectively to colorectal carcinoma cells, allowing it to enter and kill them.

To test the specificity of the immunotoxin, Collier and colleagues incubated it with colorectal carcinoma and melanoma cells. It blocked protein synthesis only in the colorectal carcinoma cells, leaving the surrounding melanoma cells unharmed. The technique holds promise to become a highly selective form of chemotherapy, in which extremely toxic agents could be targeted to a patient's tumor cells without killing healthy tissue.

By linking toxin to a monoclonal antibody, Collier and colleagues created an immunotoxin that holds promise as a highly selective form of chemotherapy.

Collier is leaving to others the task of perfecting immunotoxins, which have so far proved effective in reducing (but not eliminating) tumors in animals. Investigators at Centre de Recherche Clin-Midy in Montpelier, France, and at research centers in the United States are now using immunotoxins experimentally in cancer patients to test their therapeutic effectiveness.

Within the next few years, immunotoxins may also be used to significantly reduce the risk of lethal graft-versus-host disease in bone-marrow transplants. Scientists will target immunotoxins to kill T-lymphocytes in the donated marrow before it is injected into the patient.

In recent years, Collier has refocused his efforts on the toxin molecules themselves. "We need to know the three-dimensional structure of the toxin, how it attaches to the cell surface, how it crosses a membrane to reach the cell's interior, and how it inactivates its target, EF-2," he explains. "This knowledge will permit us to design more effective immunotoxins and better vaccines, and will probably have other benefits, as yet only dimly perceived."

He would like to "identify, out of the 193 amino acids that make up the A-chain, the one or two active-site amino acids that actually do the dirty work, clipping and binding ADP-ribose."

Once he finds the active-site amino acids, Collier will probably be able to create a new vaccine. "Before you can go poking these toxins into yourself," he explains, "you've got to inactivate them." Rather than follow the traditional—and not always satisfactory—method of inactivating toxins by treating them with formaldehyde, Collier plans to use genetic engineering.

His goal is to "simply change one key amino acid, so the molecule now is no longer active." The inactivated molecule will not cause toxic reactions, but will stimulate formation of antibodies that will also neutralize the active toxin.

"We think we've found a key, or possibly *the* key, amino acid in diphtheria toxin," Collier says. Recently, he and Stephen F. Carroll (formerly a postdoctoral fellow at UCLA and now assistant professor in the Department of Microbiology and Molecular Genetics at HMS) replaced the crucial amino acid, glutamic acid, with another. As they hoped, the change inactivated the toxin.

Collier and Carroll located the active-site amino acid by using a novel technique, photoaffinity labeling, which they developed over the last few years. They bound diphtheria toxin A-chain to radioactively labeled NAD by exposing the mixture to ultraviolet radiation. They then chemically fragmented the A-chain and, by tracking the radioactive label, located the precise active-site amino acid that had bound NAD.

Collier's team is now using photoaffinity labeling to try to identify active-site amino acids in a number of toxins. Since Collier began his investigations, diphtheria toxin has proved to be an excellent model for many other bacterial toxins—including those of *Pseudomonas aeruginosa* (which causes severe infections in burn patients and cancer victims), the cholera and pertussis organisms, and certain forms of *E. coli*. "Whatever we find in diphtheria toxin seems to turn up elsewhere in a different form that couldn't have been predicted," Collier explains. "For example, when the ADP-ribosylation reaction was discovered, we thought it was probably unique to this toxin. Well, sure enough the reaction began popping up here and there in other toxins, even in some that produce totally different effects."

Rather than follow the traditional method of inactivating toxins by treating them with formaldehyde, Collier plans to use genetic engineering.

In related work, Collier has identified the conditions necessary to grow crystals of *Pseudomonas aeruginosa* and diphtheria toxins. X-ray crystallography by David B. McKay of University of Colorado at Boulder recently revealed *Pseudomonas aeruginosa* toxin's structure in three dimensions—the first time the three-dimensional structure of any bacterial toxin has been found. Collier and McKay hope to do the same with diphtheria toxin soon.

Collier is also exploring how toxins have evolved. "They don't seem to do anything for the bacteria that produce them, aside from causing toxic effects in the animal host," he points out. "There is speculation that the bacteria may have picked up a regulatory gene from animal cells and modified it so that instead of regulating that function—protein synthesis, in the case of diphtheria toxin—it completely shuts it down."

If that theory proves correct, it could open up the future possibility of finding these regulatory genes in tumor cells, and manipulating them so that they shut down their own protein synthesis mechanisms in what might be considered tumor-cell suicide. □

In Memory of John Enders

On September 8, 1985, the medical and scientific community lost John Enders, best known for his work with Robbins and Weller on culturing the poliovirus, which led to the development of the Salk and Sabin polio vaccines. He died at the age of 88 at his summer home in Waterford, Connecticut. In the following pages we present a several-part tribute to Enders. Three of his collaborators—Frederick Robbins, Thomas Weller, and Samuel Katz—reminisce about the man and his style, and two scientists—Harold Amos and Alice Huang—report on the significance of his work.

Robbins and Weller shared the Nobel Prize in Physiology and Medicine with Enders in 1954, "for their discovery of the ability of poliomyelitis viruses to grow in cultures of various types of tissue."

Robbins worked with Enders for four years, from 1948 to 1952. His contribution here is adapted from a piece he wrote in 1968. When we asked Robbins how long he had worked with Enders, he commented, "Once engaged with him, you maintained your relationship. I've really worked with him for the rest of my life." Weller worked with Enders first as a medical student in 1939-40, and returned to the lab from 1947 through 1954. Weller's comments were delivered at a special commemorative grand rounds at Children's Hospital in October.

Samuel Katz, who worked with Enders from 1956 to 1968, composed his contribution on short notice, "at 33,000 feet between Durham and St. Louis."

Harold Amos was a graduate student in the Department of Bacteriology and Immunology under Enders from 1946 to 1952, and later joined the department as a faculty member. Alice Huang is head of the virology laboratory Enders founded at Children's Hospital.

Enders in Hans Zinsser's laboratory

PHOTO COURTESY OF MRS. CAROLYN ENDERS

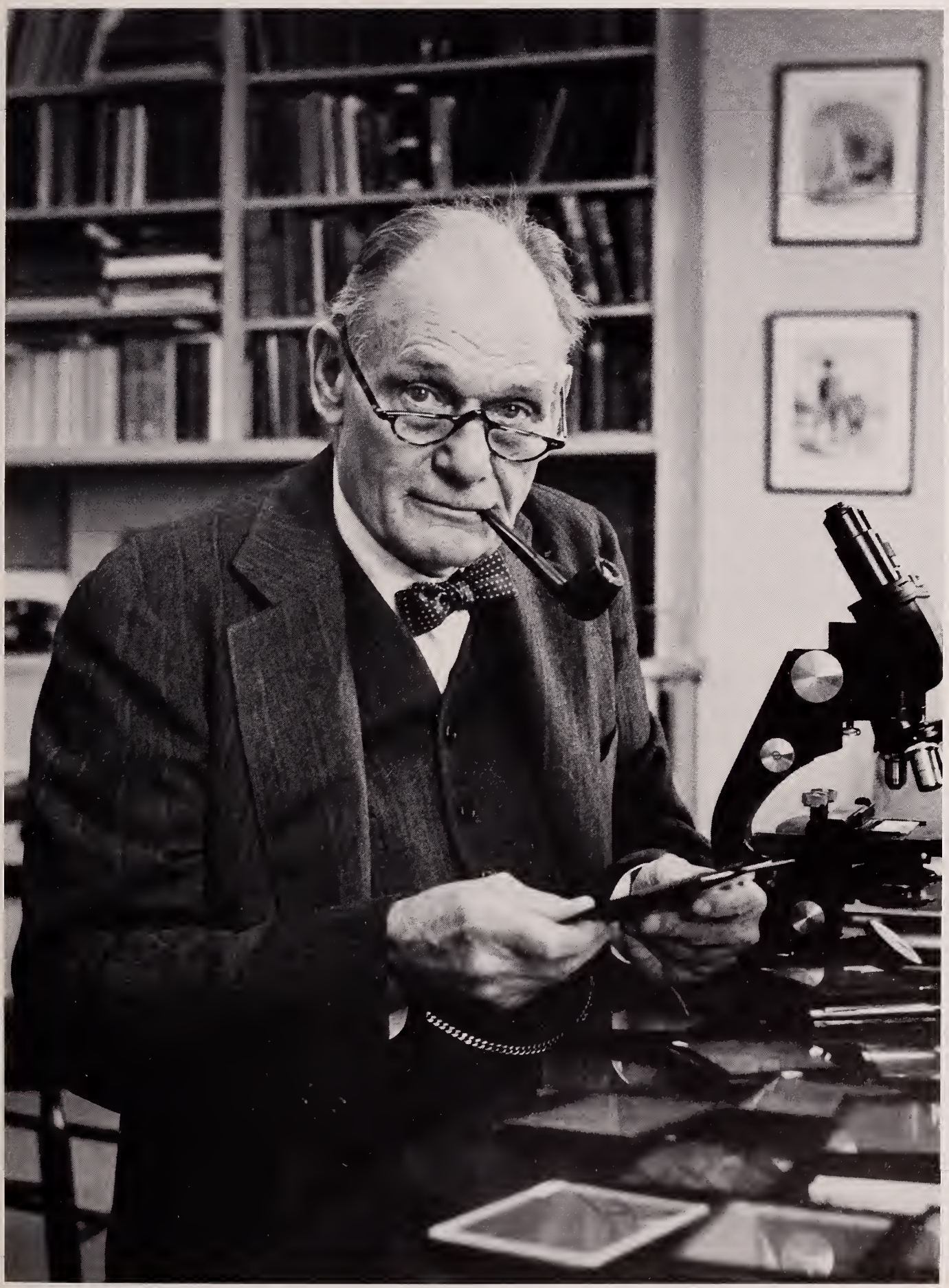


PHOTO BY IRENE SCHWACHMAN

From Philology to the Laboratory

BY FREDERICK C. ROBBINS

John Franklin Enders was born in West Hartford, Connecticut, in 1897. His forebears came mostly from the Palatinate; a small ancestral infusion of Swedish blood may explain the rather lugubrious air he sometimes assumed.

Perhaps it is not surprising that John Enders should have been endowed with unusual attributes, since among his immediate family were people of considerable character and achievement. His maternal grandfather was a close associate of Mark Twain and was his financial advisor. His paternal grandfather peddled insurance from town to town, and is said to have trudged barefoot along the open road, donning shoes only as he entered town. Enders seems to have had a good hereditary basis for his frugal habits.

His parents were people of great vitality and strong character; both lived to a ripe age in full command of their faculties. His father was president of both the principal bank in Hartford, Connecticut, and of Aetna Life Insurance Company. The family ties were strong, with great mutual respect and an appreciation of the needs of the individual. Thus, Enders enjoyed advantages of both heredity and environment, a circumstance that does not always result in so happy an outcome. He had one brother and two sisters, all persons of charm and accomplishment.

That some of the distinctive Enders traits were demonstrated early in life seems evident from the shared reminiscences of an informant who shall remain anonymous. A few stories serve to illustrate the point.

At the age of four, young John Enders was discovered sitting on a curbstone in front of his home by a lady acquaintance of the family. The little boy, absorbed in some important business of the moment, was swearing like a trooper—an early indication of his lifelong facility with the English language.

When he reached the age of 12, young John was sent away to school. He went somewhat reluctantly, serving notice that he would not stay unless the situation proved acceptable. A few days later his mother received the following message: "The school is clean, so is the kitchen—I shall stay." Here we see early evidence of an independent mind and the capacity to recognize the essential elements of a problem.

At about the same stage of his career, he wrote home to his parents warning them of the extravagances of his two sisters: "I see no reason for those shopping expeditions to New York to buy clothes. Please try to curb them," he advised. Enders' notable respect for the dollar was obviously acquired early.

Twelve-year-old John wrote home, "The school is clean, so is the kitchen—I shall stay." Here we see early evidence of the capacity to recognize the essential elements of a problem.

In 1918 his Yale education was interrupted with service in the Naval Flying Corps, and he became a flight instructor at Pensacola, Florida. Although he never experienced combat, simply sitting at the controls of the primitive machines of those days was probably about as risky as air combat is today.

This experience had a profound effect upon him and no doubt explained his extreme reluctance to fly ever since; he once told me that he considered that he had used up his luck in the air. My wife and I suffered because of this point of view when we joined Enders and his wife in a rough crossing of the North Sea from England to Sweden in December of 1954. Enders was the only member of the party who was not seasick, and indeed thoroughly enjoyed the trip.

Although a loyal son of Yale, class of 1920, Enders chose to do graduate studies at Harvard. He was awarded a Master's degree in English literature and decided to pursue a Ph.D. in the rather improbable and esoteric field of philology. That it was not an entirely happy choice is indicated by the difficulty he seems to have had in settling upon a subject for his doctoral thesis. His first choice was "The Development of Gender." After finding that earlier German scholars had exhausted this subject, he changed to "Alchemy and Its Influence on English Literature," only to shift once again to the subject of "The Doctor and Other Medical Characters in the Drama from the Beginning Until 1800."

His frustrations with this special form of scholarship are reflected in a letter to a friend in 1924. "I mouth the strange syllables of 10 forgotten languages," he wrote, "letting my spirits fail, my youth pass. If this mood lasts, I shall, by Heaven, throw it all to the four winds and go forth into the world like Faust, even if I have to bear his penalty!"

During the time he studied philology, Enders lived in Mrs. Patch's rooming house in Brookline, Massachusetts, where his fellow roomers were a group from Harvard Medical School that included Harvey Cushing, Alexander Bunts, Claude Beck, and Hugh Ward. That they had a considerable influence on him is suggested by his final choice of a title for his thesis. However, it would seem that the greatest influence came from Hugh Ward. It was through Ward that John Enders entered the orbit of Hans Zinsser, chairman of the Department of Bacteriology and Immunology, and surely one of the most fascinating and charismatic figures in American medicine.

Enders fell victim to Zinsser's charm and, further, was strongly attracted to the science of bacteriology. One might speculate that he responded not only to its intellectual challenge, but that he found its relevance to real-life problems a welcome relief from what he once referred to as the "arid scholarship" in which he had been engaged.

In 1927 the 30-year-old Enders made the decision that was so fortunate for microbiology but which pos-

sibly deprived the world of a great scholar in English literature: he enrolled as a graduate student under Professor Zinsser.

In the next year Enders wrote to his friend Alexander Bunts, "All winter I have been laboring at the sciences. Whatever the practical outcome, this antipodal revolution of my studies has been of large value in helping me to obtain that Pisgah sight of things and people that perhaps is the ultimate aim of my apparently inconsistent faltering and obscure action." In 1930 he was awarded the Ph.D. degree in microbiology with a thesis on anaphylaxis, and finally embarked upon a most remarkable and productive career.

It should be noted that it was no mean feat to obtain a Ph.D. under Hans Zinsser, a demanding taskmaster. It was many years before another doctoral degree was awarded by the HMS Department of Bacteriology and Immunology. In 1930 Dr. Enders was appointed instructor in that department. In 1962 he was appointed to the Higgins University Professorship, one of the highest honors Harvard can confer on one of its faculty.

In his early career, Enders concerned himself with bacterial infections and immunity to them. His first publication, which appeared in the *Journal of Experimental Medicine* in 1929, was titled "Anaphylactic Shock with the Partial Antigen of the Tubercle Bacillus." Although he continued some work with mycobacteria, he devoted most of his attention to the pneumococcus, and published a series of papers on studies of natural immunity to pneumococci. Among his collaborators in these investigations were such distinguished scientists as Zinsser, Cecil Drinker, A.M. Pappenheimer Jr., Hugh Ward, and Morris F. Shaffer.

Enders' first work in virology was done with William McD. Hammon, and concerned malignant panleukopenia of cats; their first report appeared in 1939. From this time on he became more and more occupied with viruses, and, at about the same time, he began to explore the value of tissue-culture techniques for viral growth.

In 1940 A.E. Feller, J.F. Enders, and T.H. Weller coauthored a paper titled "The Prolonged Co-existence of Vaccinia Virus in High Titre and Living Cells in Roller Tube Cultures of Chick Embryo Tissues." Weller was a medical student when he participated in this work, and I am sure that he would agree that the experience profoundly influenced the course of his subsequent career. It also had a considerable effect upon my own career. Weller and I were roommates when he was working with Dr. Enders, and his descriptions of the man and the experiments they were doing had much to do with my desire to work in that laboratory at the first opportunity.

Enders' first major breakthrough in virology was his development of serologic techniques for the detection of antibodies to the mumps virus. He first employed antigens prepared from the parotids of infected monkeys. Later, he and others showed that the virus could be grown in chick embryos and tissue culture and that it produced a hemagglutinin. With associates Sidney Cohen, Lewis W. Kane, Joseph Stokes Jr., E.P. Maris, and Jeannette H. Levens, he was able to describe the immunology of mumps infection, develop the skin test, and study the epidemiology of the disease.

The frequency of inapparent infection was demonstrated, as was the fact that many cases of aseptic or lymphocytic meningitis that were not associated with parotitis were indeed caused by the mumps virus. Finally, it provided the basis for the eventual development of prophylactic measures. These studies on mumps, although less dramatic than some that followed, displayed a plan of attack that was to prove effective in other situations.

In 1947 Dr. Enders moved his laboratory one block away from the Department of Bacteriology and Immunology at HMS to the old Carnegie Research Building, which had been acquired by Children's Hospital. Here he established the Research Division of Infectious Diseases which has become so well known throughout the world. Weller joined him almost immediately, and participated in establishing the new laboratory, as did his dynamic and extraordinarily capable technician, Jeannette Levens, and a young technician named Alice Northrop. (The latter changed her career plans a year or so later to become Mrs. Robbins.) In January 1949 I was fortunate enough to obtain a National Research Council Fellowship to join Enders and Weller in their laboratory.

By present-day standards, the laboratory was modest. It consisted of two rooms, a small office for Enders, and an area for storage. The animals were housed more than a block away in the HMS animal house. We all participated in such chores as washing glassware, preparing media, and checking the egg incubators on weekends. This last task I found particularly trying, and indeed forgot it on the very Sunday that the incubator failed; as a result some important experiments were ruined.

In 1948 Weller was investigating the growth of mumps and varicella viruses in suspended cell tissue cul-

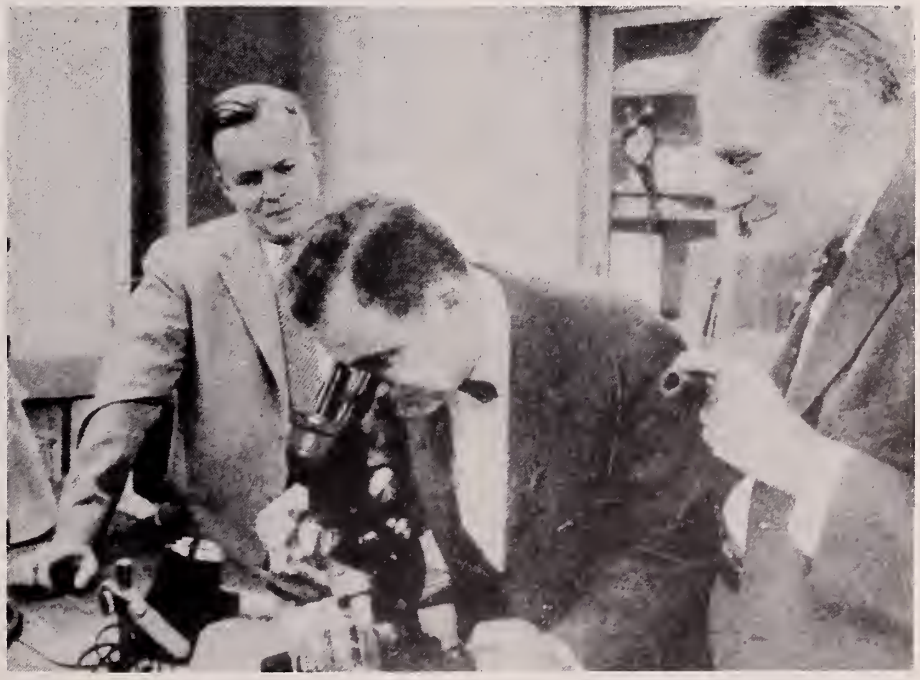


PHOTO COURTESY OF FREDERICK ROBBINS

Weller, Robbins, and Enders

The 1954 Nobel Prize ceremony

tures, and I began to explore the possibility of maintaining intestinal tissue in culture, with the aim of developing a system in which one might be able to propagate the hypothetical virus of infant diarrhea. As I remember it, Enders suggested that we might inoculate some of our cultures with poliovirus.

Much to our surprise, the Lansing strain did propagate in Tom Weller's cultures of human embryonic skin and muscle tissue. At first it was hard to believe, but finally even Enders was convinced; we submitted a short note to *Science*, and it appeared in 1949. The subsequent events are now ancient history, but the ensuing months and years were hectic and exciting.

The findings reported by our laboratory were soon confirmed and extended by others. The cytopathic effect was observed and exploited for recognition of viral growth, and serologic tests were developed employing tissue cultures in place of animals. Methods were developed for utilizing tissue cultures for the isolation of viruses from patients, and it was demonstrated that with passage in tissue culture, polioviruses became less virulent for experimental animals. I am sure none of us expected that these relatively simple experiments would have such far-reaching effects and result in a trip to Sweden. The fact that his two junior colleagues were invited to share in the Nobel Prize is the most eloquent possible testimony to the personal characteristics of Dr. Enders that have endeared him to those who have worked with him. He made it clear in everything he wrote that we were partners in the enterprise; his phrasing and behavior paved the way for our inclusion in the prize.

Enders was not content with these achievements, but promptly tackled another disease: measles. Here too, his efforts were crowned with success, and in 1954 he reported with Thomas C. Peebles that the virus of measles had been grown in tissue culture. A classic series of investigations followed in association with junior associates—including Kevin McCarthy, M.V. Milovanovic, Anna Mitus, Samuel Katz, Donald Medearis, and his most able technician and associate, Ann Holloway—that resulted in the measles vaccine. It would appear that another of the plagues of man is destined to oblivion.

Enders then turned his attention to the problem of viral oncogenesis, and again he made most important contributions with collaborators, this time Harvey M. Shein, George T. Diamandopoulos, and others. He also became interested in the effect of induced fusion of cells on susceptibility to viruses to which they are normally resistant.

Dr. Enders continued to devote himself primarily to his laboratory and refused to allow the many honors, the irrelevant demands that are made on the time of a famous man, and the temptations of "prestigious" positions to deflect him from his first concern—his work. His laboratory became a mecca for young people from all over the world who were interested in research in infectious disease.

Those of us who had the opportunity to work closely with Dr. Enders regarded him, as did the world at large, as a great, imaginative, and productive scientist. However, we valued him more for his qualities as a man, and I, at least, considered one of his more unique and valuable qualities to be simple good sense. To most of us he was affectionately known as "Chief" or "Boss." On the occasion of his 70th birthday in 1967, a celebration was organized by people who had worked with him, including nearly 100 scientists from all over the world.

I wish also to mention Mrs. Enders, always a source of strength and good humor and a staunch friend of those who worked in the laboratory.

The following poem is a fitting conclusion:

When I am old
And spindle shanks and sunken chaps
Betoken the coming of the fearful
Last Event,
What memories of youth will come to
steel my heart
Against the fear of meeting with my
Creator?
Will then my heart be strong with
thoughts of Deeds well done?
Of struggles, great achievements, the
joy of children?
Of weeping, sorrow, pain—a life lived
to its full?
Or shall I gaze with sorrow and despair
Back upon the assemblage of empty,
wasted years
And curse a life of dull and brutish
indolence?

The author of this poem was John Franklin Enders when in the fifth form at St. Paul's School in 1914. I leave it to each of you to decide the answer to his question. □

Frederick C. Robbins '40 is University Professor and dean emeritus, Case Western Reserve University School of Medicine. This article is adapted from the 1968 Gustav Stern Symposium printed in Virus-Induced Immunopathology, *Academic Press. Reprinted with permission of Academic Press.*

PHOTO COURTESY OF MRS. CAROLYN ENDERS

The Prevailing Climate

BY THOMAS H. WELLER

John Enders' special approach to science conferred a rich heritage on those who worked in his laboratory. Much as his mentor Hans Zinsser influenced Enders in the choice of a career, so did Enders influence a host of younger associates; at the time of Enders' 70th birthday, his alumni numbered 92.

Enders' science reflected the individual, his background, and the scientific climate of the time. In contrast to Zinsser, Enders was not flamboyant, but was possessed of equal personal magnetism. Avoiding interactions with large groups whenever possible, he enjoyed discussing work, politics, literature, and the arts with younger associates in the laboratory. Such discussions might go on for hours; the passage of time was ignored.

Enders' capacity to select particularly relevant findings from a mass of data was unique, as was his capacity to then move to the next logical experimental step. Manuscripts were written and then rewritten at his direction, with the content reflecting his strong sense of history, and the prose reflecting his classical education. Relevant references required citation and appropriate credit was given to prior work. Papers appearing in the literature that failed to meet his scientific standards were dissected with a snort and a salty comment.

I can almost hear his reaction to the otherwise excellent paper on the three-dimensional structure of poliovirus that appeared recently. The authors stated that poliovirus was the first virus to be grown in cultured cells, and credited us with this accomplishment; in fact, in 1925 Parker and Nye grew vaccinia virus in cultures of rabbit testicular tissue. Between 1925 and 1949 numerous other viruses were grown in tissue cultures.

The scientific climate shaped Enders' science. When I joined him as a medical student in the Department of Bacteriology and Immunology in 1939, his annual research budget was under $500. The only method we had of titrating vaccinia virus that we were growing was to inoculate rabbits intradermally with dilutions of the culture fluids. Rabbits were expensive; they were shaved and every inch of skin was used. I have a mental picture of Dr. Enders holding an anesthetized nude rabbit on his lap while post-doctoral fellow Al Feller and I alternated in doing injections, a process that took several hours. I believe only the rabbit considered the process tedious; our conversations were most stimulating.

When Enders asked me to join him in setting up a laboratory in the old Carnegie building in 1947, the same climate prevailed. The place had been vacant for years and soot from the power house had infiltrated each window frame. Enders had a small office and lab and I had a desk in a small lab. Glassware was washed in a back room. My roommate Fred Robbins joined us in 1948. We improvised; the culture hood in Enders' lab was an ancient fume hood modified only by the addition of a fluorescent lamp. Our autoclave was obtained from war surplus for $25.

There were developments that changed the lives of the key characters, for administrative assistant Carol Keane became Mrs. Enders and my technician, Alice Northrop, became Mrs. Robbins. Those were happy times and incipient traditions surfaced. On days when there was a significant research finding, Enders donned a special hat; the hat collection rapidly expanded as colleagues and alumni contributed. His red Cardinal's biretta was reserved for particularly important findings. Another tradition was the superb Christmas party at the Enders' home, an occasion that Carol managed with aplomb.

Enders' science captivated and stimulated his junior colleagues. His contributions to science are paralleled only by his contributions to the development of a generation of specialists in infectious disease. □

Enders and Weller shortly after Nobel prize announcement

Thomas Weller '40 is Richard Pearson Strong Professor of Tropical Public Health emeritus at Harvard School of Public Health.

Elements of Style

BY SAMUEL L. KATZ

John Enders' stature as a scientist should not be remembered or assessed merely by the vast array of honors which were bestowed upon him—including the 1954 Nobel Prize, the Presidential Medal of Freedom in 1963, the Cameron Prize of University of Edinburgh, a Lasker Award, the Ricketts Award of University of Chicago, the Robert Koch Medaille, the Galen Medal of the London Society of Apothecaries, the Passano Award, the Kimble Methodology Research Award, the Charles V. Chapin Medal, the Gordon Wilson Medal, the R.E. Dyer Lectureship Award, the Diesel Medaille; memberships in the National Academy of Sciences, the Royal Society (London), and the French Academy of Sciences; honorary degrees from, among others, Yale, Harvard, Trinity College, Northwestern, Jefferson Medical College, Western Reserve, Tulane, Tufts, Hartford, Duke, University of Pennsylvania, University of Ibadan, and Oxford.

Enders' many achievements in human biology were profound, and opened vast areas of research to subsequent investigators who have followed his guidelines, utilized his techniques, and furthered his concepts.

What must be emphasized for today's (and future) young researchers is that this extraordinary man succeeded while maintaining unwaveringly impeccable standards of personal and scientific honesty. His was a unique style, one which has nearly vanished from biomedical science in the 1980s. The results of his studies were never "published" in press conferences or through other media events. They were presented in fastidiously composed papers submitted to journals with critical editorial review.

Enders did not draft a manuscript until experiments had been repeated over and over again, assuring total reliability and reproducibility. He wrote and rewrote these manuscripts meticulously (in pencil on yellow lined paper) to make them clear, succinct, precise, and thoroughly readable. A demanding philologist, he had pursued graduate studies in English preceding his choice of a career in microbiology. The pathways to exciting results were recorded in so lucid a fashion that an interested reader could recreate the reported experiments in his own laboratory simply by following the "Materials and Methods" section of an Enders paper.

Every day Enders made the rounds of the benches to talk with each fellow and ask, "What's new?" Those two words were a wonderful stimulus to productivity, because a fresh answer earned one extra time with the Chief.

The openness and generosity of the Enders laboratory were striking. These characteristics stemmed directly from "the Chief" (as most of us called him), who believed that the fruits of research would be most rapidly nurtured by sharing with others who could then conduct the next experiments. The door was always open to visitors from throughout the world. Few scientists left such a visit unaccompanied by carefully packaged boxes containing samples of virus, cells, sera, reagents, or other ingredients, to ensure the ready progress of their own experiments back at home. The data in laboratory notebooks were shared with visitors who sought specific information on experiments recently completed or still underway.

Politics in the laboratory were generally liberal, occasionally radical, but rarely conservative. As Fred Robbins recently observed, John Enders reversed the usual aging trend by his increasing liberal commitment with advancing years. In contrast, his economics were stringently conservative, perhaps penurious. The scion of a wealthy Connecticut banking and insurance family, he was scrupulously protective of the taxpayer's dollar, never profligate in his laboratory budget.

For the majority of the many productive years of the Research Division of Infectious Diseases which Enders headed at Children's Hospital, only two modest grants were maintained, one from the Virus Commission of the Armed Forces Epidemiological Board, the other from the National Institute of Allergy and Infectious Diseases of the National Institutes of Health. It was not unusual for unexpended funds to be returned at the end of a fiscal year. Salaries were modest and any proposed increase for a technician, secretary, or faculty member was scrutinized with Yankee parsimony.

The superficial Enders guise was that of a round-shouldered, overburdened, sometimes meek, pedantic scientist—a caricature he deliberately fostered and exploited effectively as a shield against the unwelcome intrusion of assignments to distracting committee or administrative chores. In fact, he was a strong, competitive, thoroughly contemporary, artful academician who conserved his energies for those challenges he judged worthy.

He traveled infrequently and only on special occasions, either to enjoy a few days with his beloved wife Carol at their seaside home in Waterford, Connecticut, or, rarely, to attend the required meeting of a funding group or a scientific session where topics of particular interest to him would be discussed. With some predictability, an acute respiratory infection often afflicted him the day prior to a scheduled commitment in Washington, D.C., so that one of the junior staff was quickly mobilized to depart for a review session to report on the laboratory's activities. Although it was flattering to be entrusted with such a mission, we also viewed it as our responsibility to protect the Chief so his research could continue uninterrupted.

Teaching was constant and per-

John and Carolyn Enders, 1975

sonal. Every day Enders took time to make the rounds of the laboratory benches to talk with each fellow and ask, "What's new?" That two-word question was a wonderfully effective stimulus to enhanced laboratory productivity because a fresh answer to the inquiry earned extra personal time with the Chief to discuss one's observations. To preserve this intimacy and a full awareness of all projects in the laboratory, he never accepted more than a few trainees and one or two faculty associates at any time.

Formal teaching outside the laboratory was quite another matter. Each year he faithfully made his way to Amphitheater D to participate in the virology sessions of the microbiology course for medical students. His complete lecture was handwritten in advance as painstakingly as scientific manuscripts. They were a joy to read.

Their delivery was another matter. After adjusting the microphone around his neck and checking that it was live, he would extract a large handkerchief from his vest pocket and blow his nose with significant amplification by the sound system. We were never certain whether that was a nervous habit or meant deliberately to arouse the students' attention or laughter, but it usually did both. He extracted a large gold pocket watch from another compartment of his vest and placed it on the lectern to assure punctuality in his presentation. The lecture was articulate, but dry, and rarely overwhelmed the audience. His own disciples sat squirming in the back row seats hoping the students would perceive the gems they were receiving. After the lecture, we joined him for the short walk back to the laboratories in the old Carnegie Building of Children's Hospital, assuring him of how fine his presentation had been, even though both he and we suspected that few of the students appreciated what had been offered.

We did animal work in a basement room housing the monkeys with which we studied enteroviruses and later measles and rubella viruses. He greatly enjoyed his visits to the animals accompanied by the fellows who were responsible for those experiments. His own experience had been gained under the tutelage of John Lyons, the redoubtable animal caretaker of the Department of Bacteriology and Immunology. We were the next generation to inherit the Lyons'-Enders' tricks for managing reluctant simians. These included a blend of benevolence and craftiness not unlike the way Enders managed higher primates.

There were other idiosyncracies, some inadvertent and others deliberate. Enders arrived late each morning in the laboratory, chauffeured by Carol and carrying one of a set of wicker baskets in which she had deposited a lovingly prepared jelly sandwich, some fresh fruit, and several pieces of her superb chocolate fudge all neatly wrapped and contained within a fine linen napkin. Unconsumed fudge was the reward of those workers who remained with him late in the day, long after usual departure times. Often while he ate at his desk he read journals, particularly *Science*, in which he relished reviewing the articles outside his own field. Geology, physics, botany, and other topics all fascinated him, and he had the enviable knack of quickly perceiving the main point of each presentation.

Bow ties and vests were a daily uniform, with four-in-hand ties reserved only for special occasions. Atop the shelves in his office was an array of hats of every sort, collected personally or presented by many of his friends and admirers, to be donned when a particularly significant laboratory test was to be examined: a poliovirus neutralization test, a complement-fixation test for antibodies after inoculation of monkeys with an attenuated measles virus, a titration of rubella virus, a review of cell transformation by SV-40. There was an exciting combination of humor, suspense, elegance, and intensity as we gathered round for the occasion.

The technicians in the laboratory were "the girls" and the fellows were "the boys" until Drs. Anna Mitus, Martha Leas, and Catherine Wilfert antiquated this nomenclature by their selection as fellows. Nothing was too menial for a fellow. In order to learn thoroughly every detail of cell culture and virology techniques, the fellows shared responsibility with the technicians for the preparation of common pools of media, reagents, and cell cultures.

Before the advent of plastic disposable laboratory ware, there was a glassware preparation room presided over by a succession of autocratic Latvian émigrés who ruled with an iron hand. Even the Chief hesitated to alter their procedures without keen diplomatic negotiations. They were exemplary individuals who made their way in a new country via the glassware room, but in their evenings and weekends were painter, agronomist, geologist, and Shakespearean actor. Each was treated with the same respect afforded all colleagues in the Enders laboratory, in total accord with the general theme of his approach to humanity. In 12 years of close daily association, I can recall only one person for whom he could not find some

PHOTO COURTESY OF MRS. CAROLYN ENDERS

Weller, Robbins, and Enders

redeeming feature, and that man was indeed a rogue.

Like his own mentor, Hans Zinsser, Enders was a man of many talents. He appreciated music and enjoyed playing Bach at home on his piano, but rarely before an audience. At his annual Christmas party, he was a courtly figure in dark trousers, vest, and a crimson smoking jacket as he plied each guest with a treacherous whiskey punch made from his own recipe.

One delightful tradition involved the drawing of names from a hat, a few weeks before the holiday, for the giving of Christmas presents. More attention was focused on the requisite poem which accompanied the gift, and which was read aloud at the time of presentation, than on the gift itself. Some of the efforts were indeed remarkable, but none matched those which Enders himself composed, and it was a true joy to be the recipient of his poem and gift. The evening ended with the Chief at the piano and his guests gathered round him, his "family" singing Christmas carols.

Enders' choice in literature was broad and eclectic, ranging from ancient to modern, Homer to *The Hardy Boys*. No character in a Shakespeare play had escaped his analysis; a choice of these characters frequently formed the basis for comparison to a contemporary figure under discussion.

Fishing was Enders' favorite outdoor hobby; it took him from the waters of Long Island Sound off the shore of his Connecticut home to the salmon rivers of eastern Canada. The latter included an annual pilgrimage to one of the famed salmon streams where his brother belonged to a private fishing club. If the fishing was good, a large wooden crate arrived in the laboratory containing a beautiful salmon packed in ice. The fellows' responsibility was to clean and prepare the salmon steaks, which were then distributed to all members of the laboratory. The Chief's fiscal conservatism was humorously revealed by his estimate of the probable cost of each salmon based on all the expenses of such a trip to New Brunswick.

At the end of each working day, Enders frequently rode home in a taxi, so often that most of the drivers came to know him well. They called for him at the laboratory exit of Children's Hospital, and often questioned him about the progress of his research. One of his favorite stories was of the driver who advised him to keep on trying so that perhaps someday he, like Dr. Salk, would discover something wonderful.

In its customary fashion, Harvard was never precipitous in promotions; Enders remained an instructor for five years, an assistant professor for seven years, and an associate professor for 14 years (including two years after he received the Nobel Prize). He was firmly convinced that the size or magnificence of laboratory surroundings and equipment had little relationship to productivity or success—if anything an inverse relationship.

This belief was fully compatible with the rather spare rooms which housed his laboratory in the old Carnegie Building. When Dr. Sidney Farber generously offered additional space in the Jimmy Fund building, two modern laboratories and an office befitting the Chief were then added. There were later moves, to a temporary building near the juxtaposition of the Brigham parking lot and the House of the Good Samaritan, and eventually to the research building on Longwood Avenue which now bears his name. He never coveted space, tolerated these moves amica-

bly, and maintained genuine concern that his needs not impede resources for younger investigators.

In order to meet a deadline of the *Bulletin*, these paragraphs are written in haste, violating a cardinal maxim of the Enders school of composition. However, I am confident he would forgive me. Is it any wonder that those who knew him loved and revered this great and gentle man? □

Samuel L. Katz '52 is Wilburt C. Davison Professor and chairman of the Department of Pediatrics at Duke University School of Medicine.

A Conceptual Jump

BY ALICE S. HUANG

Medical students are subjected for endless hours to demonstrations of diseased organs and to microscopic slides made from them. For poliomyelitis, a paralytic disease that attacks the legs or the muscles of the chest, the affected organ is the spinal cord and, in particular, the nerve cells that control motor functions. These usually large cells with extended nerve fibers become shrunken, and their usually plump nuclei turn into tight knots—events due to poliovirus.

But why was it that during the 1950s a detailed examination of these cells by capable scientists failed to show the virus? Despite the difficulties of growing these neurons in the laboratory or maintaining spinal cord organ cultures outside the body, many scientists at that time persisted with the notion that growth of poliovirus—or any other infectious agent, for that matter—could take place only in the target cells. Of course, all these efforts failed to produce any substantial amount of poliovirus.

What the Enders team accomplished was a major conceptual jump. Taking a pure culture of cells derived from a human tumor unrelated to neurons or the spinal cord, they showed that poliovirus could be propagated readily. Although skeptics claimed that viruses grown in such unrelated cells might be so changed that they no longer bore any relation to the neuron-attacking agent, the ability to grow large amounts of poliovirus eventually led to the vaccines and the ultimate eradication of an epidemic that terrified every American household.

This conceptual jump was rapidly followed by the successful growth of most viruses in the laboratory, ushering in the birth of molecular virology and its important sister sciences. Diagnostic virology became possible. Our knowledge of the regulation of cell growth and the cancers that arise when these controls go awry are dependent on cells and viruses. The impact is indeed immense.

Was Enders affected by the importance of this singular finding? Did recognition by the Nobel Committee change him? I didn't know him until his sunset years, but from all reports, he remained quietly unassuming.

PHOTO BY JERRY BERNDT

One Nobel laureate helping another: John Enders ('54 prize) and Torsten Wiesel ('81 prize) before the HMS Bicentennial Convocation in 1982

When I was interested in obtaining an academic position in Boston in the early 1970s, my friend Andre Lwoff, a French Nobel laureate, suggested I speak to Enders, the recognized dean of virology. It was good advice—although at first Enders was discouraging about my prospects of becoming a Harvard professor. It developed, however, that both Harold Amos in Microbiology and Molecular Genetics and Edward Kass at the Channing Laboratory were looking for a virologist; one had an opening but limited space, and the other had the space. Somehow John Enders put the two together, and they came up with an appointment for me.

When I spoke with Enders of my job concerns, he listened patiently, nodding occasionally in a supportive manner. When we discussed the latest scientific results, however, which we did now and then over the years, he became totally different. He got a serious twinkle in his eye and showed noticeable excitement by asking perceptive questions and suggesting new strategies. It was clear that this was what he thrived on.

I developed the habit of sending him all my preprints, and then coming to talk to him. He often recalled data that were published in out-of-the-way places, or before my time. He encouraged these interactions, often for hours, with younger scientists, even when he was no longer able to come to work himself. Now, as I travel, his former students from all over the world share with me their remembrances of a loyal friend and dedicated teacher.

Enders represents the passing of a generation of gentleman scientists whose integrity was never questioned and who competed for the sheer joy of knowledge. There is a new generation of virologists that knowingly or unknowingly owes a great deal to this remarkable man. May we remember him not only for his great scientific insights but also for those wonderful qualities he embodied. □

Alice S. Huang, Ph.D., is professor of microbiology and molecular genetics at HMS and director of the Laboratories of Infectious Diseases at Children's Hospital, where she investigates the mechanisms by which viruses are activated. She is interested in the regulation of macromolecular synthesis and function; her research is focused on the role of defective interfacing particles in viral disease.

The Birth of Modern Animal Virology

BY HAROLD AMOS

Before the work of John Enders and his group, animal virology was confined largely to studies conducted on animals and in specialized tissues such as the chorioallantoic membrane of the chick embryo. The limitation of animal studies, in which the whole animal was infected by a specific route, included quantitative estimates of the amount of virus used for the infection and the amount of virus produced by the infection.

The most precise work required the use of tens of animals and suffered from all the idiosyncracies of animals from different lots of both inbred and outbred strains. At best the work was expensive and slow, since death or severe infection was required as a precise endpoint for the titration of the suspect virus.

Use of the chorioallantoic membrane of the chick embryo at the 10th to 12th day of development added a dimension of quantitation of considerable importance, as did the use of the hemagglutination test as an *in vitro* test of virus concentration. The former method was employed with pock-making viruses such as herpes simplex and vaccinia virus; the latter for influenza virus.

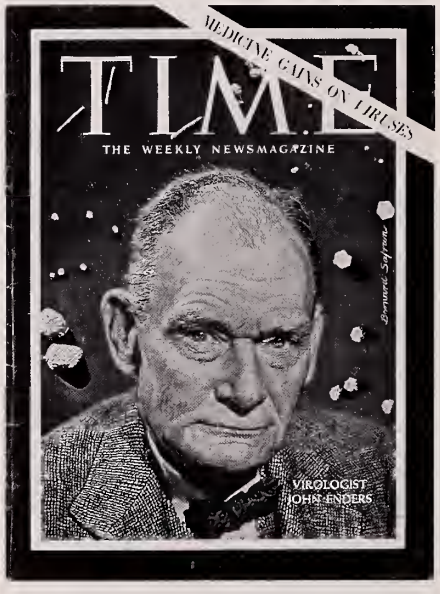
The cultivation of animal cells had begun with Ross Harrison of Yale just before World War One. The emphasis for two decades was on the cultivation of fragments from various organs, principally embryonic organs explanted to culture vessels. From the explants cells migrate to form a halo of cells one layer in thickness. For the most part the migrating cells were thought to be fibroblasts, though it is possible that some of the cells observed in such experiments were of other cell types.

During that period only histochemical methods were employed to classify cells. The major, if not the only, criterion for classification was the morphology of the cell. Such explants were used for virus infection by a few investigators in the 1930s, but did not contribute much to animal virus research largely because the end point of infection required a secondary titration of the fluid containing, or thought to contain, the virus in the classical test animals.

In the late 1930s and early 1940s, successful efforts were made to cultivate several viruses in cells in tissue culture as opposed to organ explants. The tissue cultures employed were derived from both neural and non-neural tissues. The viruses grown included, among others, poliovirus, which was the object of interest of Dr. Enders and coworkers.

The 1949 *Science* paper of Enders, Robbins, and Weller reported the growth of poliovirus in non-nervous tissue. That and a series of papers from the group published within the following two or three years established not only the reproducibility of virus production in cells in culture, but introduced the phenomenon of cytopathology (the destruction of the cultured cells) by the virus as a marker for virus production and for use in measuring the virus titer in a given preparation.

Poliovirus had previously been grown in cultures of neural tissue by Albert Sabin, but attempts by other investigators to grow it in non-nervous tissue had not been successful. This major advance prepared the way for growing a variety of important virus pathogens in cell cultures of pure strains or lines of cells.



Enders made the cover of Time *in 1951*

The use of cytopathology as an index of virus production made possible inexpensive and rapid titrations of polio and many other viruses, and permitted the study of the kinetics of virus infection in the same way it could at the time be studied in bacteria infected with bacterial viruses. That meant that the attachment, penetration, and early and late phases of virus production could be examined with precision and that manipulation of the conditions of cellular metabolism affecting virus production was now accomplished with ease.

Among the earliest uses of the Enders system was the testing of the blood of patients for evidence of antibodies against a variety of viruses. Very small quantities of blood served to give the titer, or strength, of the protective antibodies before and after vaccination and to indicate the causative agent of a suspected viral infection by showing the rise in the patient's serum of antibodies specific for a given agent and no other.

Among the most important advances for the future of virology that stemmed from the work of the Enders group was the development of the methodology for placquing animal viruses. That method depends upon the ability of the infecting virus to destroy cells in the culture; with cytopathology one could count the number of placquing units in a virus suspension or in blood or some other body fluid. The placquing technique itself was developed by Renato Dulbecco, but was a direct outgrowth of the recognition by the Enders group of the significance of the destructive action of the virus upon the infected cells.

It is fair to say that modern animal virology, leading to the current molecular biology of animal viruses and cells (including the recent accomplishments in the introduction of foreign genes into animal cells by viral vectors), got its start in the work of the Enders group. And as is well recognized, the use of live attenuated virus for the vaccination of susceptibles was a direct outgrowth of that work. □

Harold Amos, Ph.D., is Maude and Lillian Presley Professor of Microbiology and Molecular Genetics.

Enders in His Own Voice

On Virology and Medicine

Enders was invited to deliver an Annual Discouse to the Massachusetts Medical Society in 1964. The following paragraphs were the opening of his talk, titled "Thoughts on Future Contributions of Virology to Medicine."

To be chosen as its orator by this society confers upon any member a high distinction and at the same time imposes a heavy responsibility. For me, an associate member, the honor becomes overwhelming. . . . I first considered rather broad topics that might seem timely to anyone with a concern for the future of medicine, such as the present state of the marital relations between medicine and natural science. . . . Matters of yet wider scope came to mind, and I asked myself whether it would not be appropriate to touch upon problems presented by today's expanding population, problems that are becoming increasingly apparent and in the relatively near future may force profound changes in the ethics and practice of medicine as well as in many other basic features of our civilization.

Having for some time been carried aloft by visions of soaring themes like these, I was suddenly brought back to earth by the recollection of a scene from *Henry IV* that offers a potent antidote to the temptation of the elderly to be overwise. In this scene the fiery, verbose, old Glendower brags to young Hotspur of his power over his fellow men and even over the beings of the other world. Hotspur remains throughout the provocative and witty skeptic.

I am not in the roll of common men [pompously declares Glendower and goes roaring on]/Where is he living, clipped in with the sea/That chides the banks of England, Scotland, Wales/Which calls me pupil, or hath read to me?/And bring him out that is but woman's son/Can trace me in the tedious ways of Art/And hold me pace in deep experiments.

While he stops to catch his breath Hotspur, to goad him further, casually remarks:

I think there's no man speaks better Welsh/I'll to dinner.

Glendower thereupon puts forth his most impressive claim to superiority, his skill in magic, shouting, "I can call spirits from the vasty deep." Promptly and beautifully he is deflated as Hotspur coolly remarks:

Why, so can I, or so can any man;/But will they come when you do call for them?

When I remembered these words I too was deflated and decided not to attempt to call up a subject of too great breadth, lest to my Glendower you might play the Hotspur. I concluded that I should stick to my last and talk about viruses.

—*Reprinted by permission of* The New England Journal of Medicine, *Vol. 271, page 969, 1964.*

Upon Accepting the Nobel Prize

The following short excerpt is from a lengthy speech Enders delivered at the Caroline Institute in Stockholm on December 11, 1954. True to form, he made it clear he was speaking for all three recipients of the prize: himself, Robbins, and Weller.

Biology, including medicine, has long sought to range itself with physics and chemistry by defining general principles that govern the reactions of living organisms. Within certain areas such as genetics and biochemistry much progress has been made toward these ultimate goals. In other biological disciplines, however, as in our own of viruses and viral diseases, the situation in certain respects does not differ too greatly from that of the state of medicine in the time of Claude Bernard. Medicine he described as a science in its infancy where complex and obscure questions were still to be studied and where experimental ideas did not always emerge from the rather vague conceptions then current. Under these circumstances, he wrote, "physiologists should not be afraid to act somewhat at random, so as to try—permit me the common expression—fishing in troubled waters. This amounts to saying that, in the midst of the functional disturbances which they produce, they may hope to see some unexpected phenomena emerge which may give direction to their research."

In our own studies we did not depend entirely upon fishing in troubled waters, but that we profitably indulged at one point in this sport cannot be denied.

About the Polio Battle

Asked what had made him persevere on his Nobel prize-winning quest when it appeared foredoomed to failure, Dr. Enders replied:

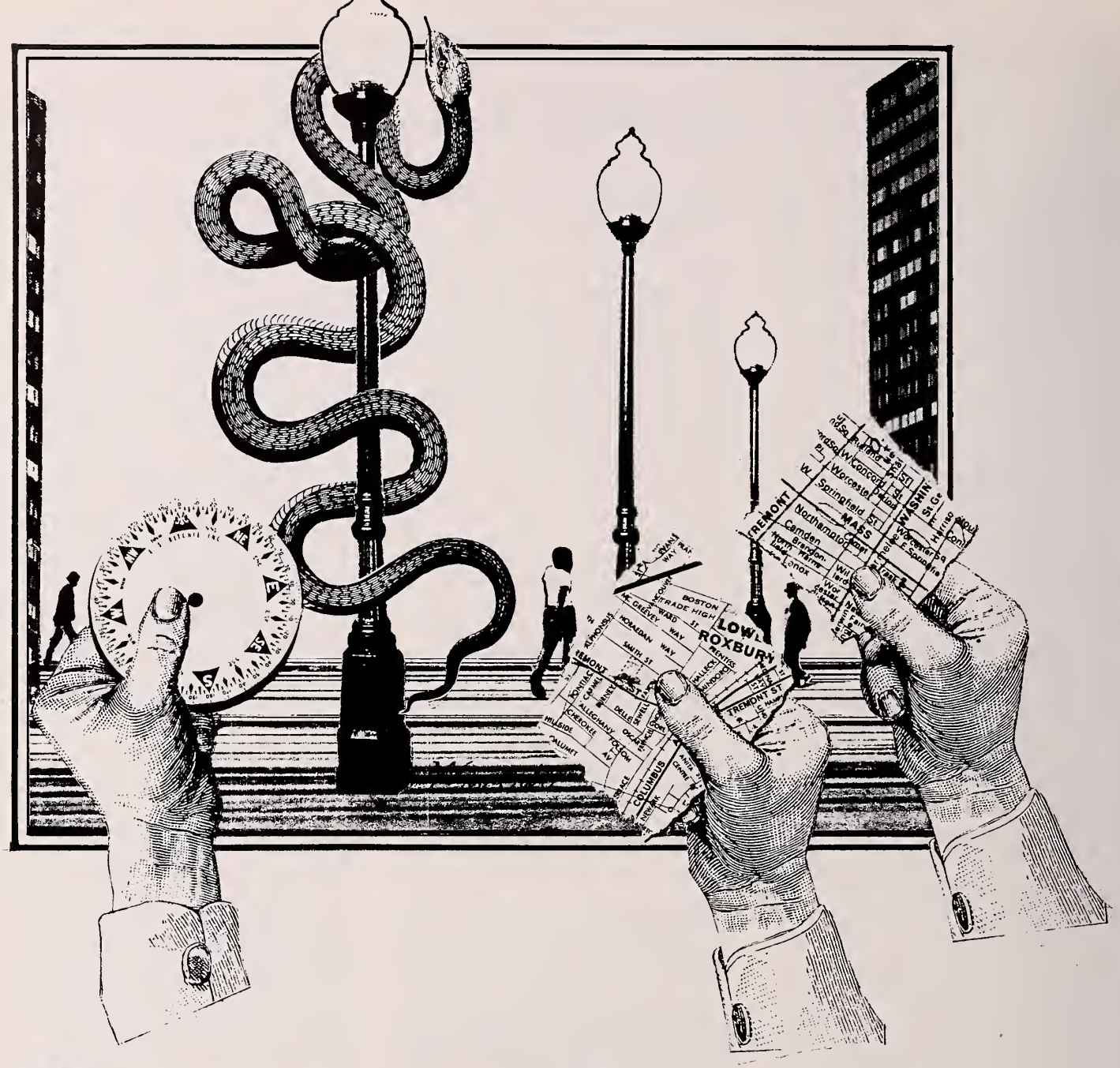
"I guess we were foolish."

On receiving the Passano Award of $5,000 in 1953, Dr. Enders quoted his former master, Dr. Hans Zinsser, a famous Harvard bacteriologist, to explain how he had succeeded where others failed:

"It is an erroneous impression that scientific discovery is often made by inspiration—a sort of coup de foudre [thunder clap] from on high. This is rarely the case.

"As a rule the scientist takes off from the mainfold [*sic*] observations of his predecessors and shows his intelligence, if any, by his ability to discriminate between the important and the negligible, by selecting here and there the significant stepping stones that will lead across the difficulties to new understanding."

—*Excerpted from* The New York Times, *April 13, 1955.*



Strangers in a Strange Land

Students Enter the World of Boston's Neediest

ILLUSTRATION BY MARJORY WUNSCH

The Big Picture

by Adam J. Silk '88

The inspiration for a project to get students working in Boston's neighborhoods came from a 1984 HMS course called Plain Doctoring. Stressing that spending time in patients' homes and neighborhoods led to better understanding of their health needs, the course—taught by Andrew Billings, Robert Coles, and John Stoeckle—included visits to patients' homes in poor areas of Boston, places to which HMS students are rarely exposed.

Three students—Lorraine Dudley, Larry Ronan, and Linda Shipley (all Class of '87)—were so inspired by the experience, they created a program for students to spend the summer between their first and second years working in underserved sections of Boston. A Harvard Public Interest Health Foundation grant helped launch the project.

As the founders pointed out in their grant proposal, spiraling medical education costs compel most students to find jobs for the summer. Determined to find funding for pay on a level similar to that of the summer laboratory jobs so readily available to HMS students, they raised money from the J.C. Penney, Polaroid, and Gillette Charitable and Educational foundations, Eastern Gas and Fuel Associates, and the Massachusetts Humane Society. "The initiative and commitment to healing, in the broadest sense, make the Urban Health Project an appealing target for foundation support," says John Ramsey, assistant director of the Boston Foundation, which is considering supporting the project next year. The grant application was bolstered by enthusiastic letters of support from Daniel Federman, dean for students and alumni, and Robert Coles, professor of psychiatry and medical humanities. HMS provided office space and technical support.

The founders planned the Urban Health Project to introduce students to a range of issues in medicine and social policy, and to generate an atmosphere of collaboration that would make it a successful student-initiated and student-run project. Each Wednesday afternoon the 10 student participants left their placements to convene at HMS. First came lunch, followed by a seminar, led each week by an expert in an area related to our jobs. Seminar leaders included both Harvard faculty—such as J. Larry Brown, director of the Community Health Improvement Program at Harvard School of Public Health, who spoke on the Physicians' Task Force on Hunger in America—and community leaders, such as Kip Tiernan, one of the founders of Rosie's Place, who told us about the history and philosophy of this women's shelter in the South End.

We became politicized as we discovered that the biggest barriers to good health for the urban poor stand outside biomedical science.

We ended with a discussion led by Robert Coles, at which each member could describe his or her placement and individual work to the rest of the group. Katie Harris gave us a history of East Boston, as told by that neighborhood's elderly. Roberto Diaz Rohena described the conditions faced by Central American refugees when they come to Boston. Andy Connolly, Daniel Goodman, Janet Kinnane, and Margie Retondo told us how the homeless must spend endless hours lining up for food, clothing, and beds in shelters. Daniel and Andy arranged for some of us to spend time working in the men's clinic of the Pine Street Inn, and many of us toured the facilities there, observing the enormous amount of work by the staff and the extraordinary organization and coordination required to feed, shelter—and in many cases clothe and provide medical care for—hundreds of people every night.

We learned that the upscale image the city has worked so hard in recent years to project represents only a few neighborhoods. The complete picture, if less glossy, is more colorful. Most striking to me is how close Boston's neighborhoods lie to one another, yet how little they communicate. One afternoon I rushed from my job working with teenagers at the Harvard Street Neighborhood Health Center in North Dorchester to meet with my adviser at Beth Israel Hospital. The meeting over, I walked through the fashionable area around Longwood Avenue in Brookline. The contrast left me dazed: Brookline's elegant houses and stores just blocks away from Dorchester's run-down or boarded-up ones. I felt suddenly out of place in both worlds.

As the summer went on, we became politicized as we discovered that the biggest barriers to good health for the urban poor stand outside the realm of biomedical science. Illness may be due to poor medical access, itself the consequence of overburdened public facilities and shrinking government commitments to health. Illness can also result from bad nutrition, which may follow fast on the heels of poverty and broken family life. Homelessness, we learned, is a political as well as a public health issue. Treating only its symptoms, whether tuberculosis or abscessed feet, may lead ultimately to despair. I noticed last summer that among the doctors I worked with, those who best kept their hope alive were active in both the clinical and political arenas. These doctors, our seminar leaders, and our faculty advisers served as wonderful potential role models.

Our weekly seminars taught us how the tools of academic medicine and social science can be brought to bear on the problems we all saw daily. Paul Wise, instructor in pediatrics and affiliated with the Division of Health Policy Research and Education, told us how his study of differential infant mortality rates in black and white areas of Boston has been an instrument for social change, as it provided legislators with clear documentation of inequality in health care. Margaret Bean-Bayog, assistant professor of psychiatry, taught us basic facts about alcoholism from clinical and epidemiologic perspectives.

Our student coordinator, Madeline Wilson, spent half of each week arranging seminars, visiting all the placements, and troubleshooting for the project—in addition to working at the Boston Childhood Lead Poisoning Program. In June, she obtained free passes to a Harvard Continuing Medical Education course, "Pediatrics and Poverty," headed by Mariette

Murphy de Carrillo, instructor in pediatrics at Children's Hospital. At the course, I met two social workers who were happy to help me with some difficult issues, such as when to report a case of child abuse and how to form a discussion group for pregnant teenagers, and gave invaluable advice over the rest of the summer.

Urban Health Project meetings also gave us a much-needed sense of belonging. Most of us were the only students working in our placements; all of us were temporary workers in places filled with permanent employees. In the high-stress settings in which we worked, the consistent support of colleagues is crucial.

This fall, we are sponsoring lunchtime speakers and films every few weeks for the HMS community. Presentations have focused on issues of health and poverty, including two-tiered health care, teenage pregnancy, and health care of the homeless. We have spoken to faculty members about changing aspects of the curriculum to train all of us to be more capable of dealing with the health needs of our cities. Finally, we have been working to ensure that the project will continue next summer. Our grant application for 1986 went out in September; at this writing we are studying potential new summer placements and talking to first-year students about the project. Plans for next summer include expanding the program to 12 students.

Our discussions continue into the school year, motivating us to ponder the ways in which our HMS training is and is not preparing us for the challenges that lie outside the Quadrangle. We are aware of a commitment to meeting the health needs of Boston's poor. In a medical curriculum in which these needs are infrequently discussed, the Urban Health Project can play a conspicuous role; we hope it will become a meeting place within the medical community for those interested in the health of the urban poor. □

Witness to an Evolution

We met in Vanderbilt Hall on Wednesday afternoons—a break for the medical students from their work among Boston's poor, a break for me from the summer writing projects I'd accumulated during the preceding academic year. At first the meetings were somewhat formal, and the subject matter saddening. One by one these idealistic and determined young people told stories of the human pain they were witnessing, and declared their bewilderment and frustration as they tried to fathom its sources. Nor were they sure what, if anything, they might do to help human beings all too abstractly labeled "homeless," "alcoholic," "indigent," "culturally disadvantaged," or "a marginal socioeconomic population."

As the weeks moved along, we began to relax with one another. We read some of George Orwell's documentary writing—his experiences among the "down and out" people of London and Paris in the late 1920s, his effort to understand England's coal miners in the 1930s. We noticed his confessional moments; his acknowledgment of confusion, impatience, resentment; his explosions of anger, expressions of sorrow, declarations of concern and affection; his struggle to be decent and compassionate, despite the social and cultural distance between him and those others whose lives he was trying to comprehend. We talked about others who had left one world to document another—James Agee, for example, who lived among Alabama tenant farmers in the middle 1930s.

Such observers, however committed to the particular causes and individuals they came to know, were, finally, writers: they came, they left, they mobilized words to the best of their ability. We were part of another world; our purpose was to learn how medical students and physicians can help men, women, and children who (to put it mildly) have not traditionally had intimate or satisfactory relationships with doctors. We could not accomplish such a purpose on our own turf—in medical school buildings, in clinics, and on the wards of affiliated hospitals. These students' assignments were as far from Vanderbilt Hall as Depression-era central Alabama was from Manhattan for the cosmopolitan, Harvard-educated James Agee.

Gradually the students became much more knowing about the various worlds in which they were spending time. Week after week they described how it goes in a shelter for the homeless, among vulnerable ghetto families, with alcoholics who lack resources, for the mentally ill, for those who speak Spanish and have only recently arrived in Boston. They told, too, about the work of those who attend such people—the staffs of the Pine Street Inn, *Centro Presente*, the clinic of the Bromley Heath Project, and St. Francis House. They began to tell of not only difficult and trying moments, and the hopelessness and helplessness one can feel, but also of what they were doing to help, day after day, under certain sets of circumstances.

To be sure, the Urban Health Project concluded with no answers, no solutions—in fact, with continuing worries, doubts, anxieties, and not a little melancholy. Still, here were medical students who had witnessed firsthand some of the most serious social, personal, and medical pathology a major American city has to offer—and had witnessed, as well, the strength, decency, and sensitivity of those who work with the victims of such pathology. By the end of the summer, the students had begun to figure out what they themselves had to offer others, in mind and heart, and in practical skills.

In the long run, the future patients of these medical students will be the greatest beneficiaries of this summer's effort—the recipients of the enhanced sensitivity and heightened moral awareness this project produced in 10 medical students. I can only hope the Urban Health Project will continue to be part of the ongoing ethical and medical life of Harvard Medical School—and can only say how touching our experience together was for me, and how grateful I feel to have been part of those Wednesday afternoons.

—Robert Coles

Shattuck Shelter

by Margie Retondo '88

I had some serious misgivings during my first year at Harvard Medical School. I wondered if my emotional blueprint were being completely redrawn, if I were learning to identify more with biochemical pathways, muscle groups, and cranial nerves than with human beings in need of care and compassion.

I had a strong desire to work closely with people outside the medical school context and to learn more about real human needs, but found myself too overwhelmed by my studies to do anything about it, on a regular basis, during the school year. I was troubled by what I had read about inequities in the distribution of health resources, the growing problem of urban homelessness, and the health and other problems of the urban poor. Through the Urban Health Project, I was able to spend the summer after that year working in the Shattuck Shelter, a 100-bed shelter for the homeless in Boston. The experience far surpassed my expectations for learning and emotional involvement.

Fear of the homeless is widespread, and I certainly have not been exempt from it. Before I had the chance to spend time with people at the shelter, I had my own stereotyped image, which many people seem to share: the person in soiled clothing teetering on the edge of the sidewalk, clutching a plastic bag full of belongings in one hand and beckoning to passersby with the other. What are we afraid of when we pass this person on the street? Of being attacked (not exactly a rational fear in downtown Boston at two in the afternoon), or of being manipulated? Or do most of us have a subconscious fear that this could also, conceivably, happen to us? (I think back to the few times in my life when I miscalculated and would have been stranded—homeless—were it not for family, friends, or generous strangers.)

My own rationalization of such feelings was, "I can't help it; I'm just not streetwise." I grew up on military bases, and when I have lived in cities, it has always been in the most sheltered environments. I have worked in the rural Southwest, and in rural West Africa, but I have had little experience with urban poverty in the U.S. Before last summer I had seen nothing of the lives of the most impoverished in our society: those without enough resources even to secure a home.

Before I began work at the shelter, I tried to correct some of my own misconceptions. Who were the homeless? Many of those currently on the streets, I read, are mentally ill and have fallen through the enormous crack created by the deinstitutionalization movement and the subsequent failure to develop an alternative system of mental health care. Some of those without homes are alcoholics trapped by their disease. Others have been evicted, or lost their jobs, or have become physically disabled only to find themselves in a world suspicious of those who are unable to care for themselves. What about the safety net? There are emergency shelters, but they can hardly begin to house all the homeless, let alone address issues like permanent housing or health care. The problem is one of human suffering on a large scale: there are over 8,000 homeless people in Boston, and over two million nationwide.

Reading and collecting facts is helpful in correcting intellectual, but not emotional, misconceptions. My first week at the shelter was overwhelming. I was timid and afraid. I was unaccustomed to psychotic behavior, to the harassment and sexual remarks. I failed, at first, to realize that only a few of the shelter guests were truly aggressive, and that those few would naturally single out the new face on the staff for attention. I spent the first few days of this initiation period behind the registration desk, assisting the shelter staff and social workers, handing out toothpaste and razors, or behind the food counter (another barrier!), serving up lima beans and macaroni casserole. Gradually, I began to spend more time in front of—but within arm's length of—the counter, and finally I began sitting down after dinner in the dining area, talking or playing checkers, or hanging out in the women's dorm.

My specific tasks and projects included organizing and distributing clothing, helping serve food, facilitating a weekly shelter women's group with an occupational therapist from a nearby hospital, assisting the social work staff with medical or other referrals, organizing indexed notebooks from materials that had accumulated in the office since the shelter opened, and soliciting donations. I found such work rewarding, and was happy to be able to help in constructive ways, but I came to look forward most to the times when I could just sit and talk with people, hear their stories, and help fill the fundamental human need of being listened to.

"Part of me," says Tim over a cup of coffee, "just a *small* part of me buys the whole alcoholism-as-a-disease thing. But most of me thinks I am a drunken good-for-nothing slob." Tim generates a small income from turning in refundable cans and bottles. He is a kind and generous man who often does favors for other people who are just as down and out as he is. Sometimes, when he is drunk, his anger surfaces: he pounds on the table and shouts out his frustrations. As I came to know Tim better, I could see his crippling depression and his stubborn dignity that would turn to pain when he was inevitably treated with contempt.

When Tim told me that a dentist who had fitted him with dentures six months before had "noticed something funny" in his throat, I scheduled an appointment for an evaluation, and eventually went with him for a biopsy. His biopsy, an elective surgical procedure, was not covered by his level of Medicaid coverage. The hospital elected to do it anyway; another hospital might not have. On the day of the biopsy Tim was sober—and charming. The hospital staff loved him. When we returned a week later to get the results, he was intoxicated. There was, of course, a distinct change in the way he was received. I felt angry. I wanted to shout, "Hey, this is the same sweet, lovable guy you met last week; he's just a little *altered* right now!"

After a long wait, Tim was told that his lesion is malignant, but that with daily radiation treatments for several weeks, the prognosis is excellent. Without the treatments, he will die. Medicaid covers the cost of the treatments, but he has to find daily transportation and regular shelter (his bed at the shelter is not guaranteed), and, he is told, stop drinking and smoking during the treatment period. In order to receive life-saving treatments, Tim has to face obstacles that

(though they would pose no problem to you or me), in the context of his condition, seem almost insurmountable.

During the summer, I often became angry at the way people were treated in hospitals and doctors' offices, although the rare exceptions were inspiring. Another kind of anger I found even more overwhelming: anger at a society that has failed almost completely in its obligation to protect its most vulnerable members.

There was usually only one social worker at the shelter at any time, and I would sometimes assist with cases. That's how I met Bill. He had shown up at a hospital because he had been kicked in the back while he was lying in a park, and now had blood in his urine and a huge bruise. He had no health coverage, so the hospital sent him to the shelter. He is 29, and a schizophrenic. His face is blank, his voice without expression. He is "hooked up" with the mental health system. What this means, and what it usually meant to those I met who were "hooked up," is that he reports to a mental health center every two weeks for a shot of a long-acting antipsychotic. His mother and siblings live in a house in Roxbury, but he has no contact with them. He lived with a friend in an apartment in Dorchester until they were evicted a month ago. They began sleeping outside.

One year ago, Bill began receiving checks for his "total mental disability." His monthly check is for approximately $300. The rooming houses on our city-wide list charge about $80 a week. It might be possible to find non-subsidized housing for Bill in Boston, given the rare landlord who is sympathetic to the mentally ill, but he would have nothing left to buy food. On the other hand, if he stays in the shelter on a regular basis, he stands to lose his benefits altogether, as they are contingent on his having a permanent residence. He is on a waiting list for subsidized housing in Dorchester, but the average wait is over a year. The average wait for a supervised living situation or halfway house can be even longer. Would he like to see a doctor about his injury? Yes, he would. Some phone calls are made. He does qualify for Medicaid. In fact, he is told, he can pick up a temporary card today if he can go downtown to pick it up. There is little social workers can do for people like Bill, except get them on more waiting lists and hope for a fortunate break. At least Bill was able to see a doctor.

One of the most striking aspects of homelessness is how difficult it is to get out once one is down and out. If physical or mental illness or an emotional disturbance is not the cause of someone's homelessness, it is almost inevitably a result, and appropriate treatment without insurance or an adequate mental health system is difficult to obtain. There is the "benefits-housing trap" (no residence, no benefits; no benefits, no residence), the analogous "jobs-housing trap," and endless other obstacles. It can be a full-time job to survive when one is homeless, leaving little time or energy to try to change one's situation.

I am not sure how my experience over the summer will affect me in the long run. I worked in only one kind of shelter (there are also shelters specifically for homeless families, or teenagers). I hope that when I enter the hospitals this year, I will be more aware of the constraints on the lives of the homeless, that I will listen to them and be sympathetic to their needs, and that I will not forget the hospital social worker I met this summer who told me, "often the only way I get a referral is if I happen to see a doctor in the hall and he or she happens to remember seeing a patient that day who might need help finding a place to stay."

I hope I will have the energy to maintain an involvement in the larger issues—poverty, benefits, education, access to health care—that affect people's health at least as much as the disease processes about which I am, once again, spending most of my time learning. □

Womanplace

by Claire McCarthy '88

Before this summer I didn't understand why alcoholics didn't just stop drinking. I had heard alcoholism referred to as a disease, but I didn't really know what that meant. If I thought of it as a disease at all, it was as a moral or psychological problem. Spending a summer working at a halfway house for alcoholic women changed my views radically.

Womanplace is a state-supported 19-bed recovery home located on a quiet street in Cambridge. It provides a structured, Alcoholics-Anonymous-based rehabilitation program for alcoholic women, with individual, group, and family counseling as well as assistance in obtaining benefits and jobs. I worked there for 10 weeks providing health education and advocacy, and participating in staff meetings, discussion groups, and routine office work.

When I first started, I kept looking at the women, trying to find something different, something unifying to explain their alcoholism—and I could find nothing. They were women in pain; the pain was loud in their eyes when they arrived and it never left, although it dulled sometimes. But as I got to know them I could find very little morally or psychologically wrong with them.

There was a woman—I'll call her Alison—who had severe cirrhosis and had been told by her doctor that if she started drinking again, she would die. Alison and I had many interests in common; she often visited the office I shared, and we'd talk about everything from literature and ethics to which popular actor we thought was most handsome. I went along with her to her doctor, and we sat on the bus chatting and laughing as if we had been friends for years—indeed, I would find myself thinking of her that way. Then she would say something about her drinking or her liver disease, the pain would come into her eyes, and I would suddenly remember the context of our friendship. She had had a difficult childhood and a terrible marriage, but that is true of many people who never have a drinking problem. The only thing really wrong with Alison was that she had alcoholism.

Shortly after I began working at Womanplace, an alcoholic woman physician was referred to us. When she talked about her life, and about being a physician, the pressures she described—such as the demanding hours and the need to keep up with medical progress—were pressures I could easily imagine myself feeling. Her fears—such as being responsible for a patient's death—were fears I could easily imagine myself having. She had a difficult family life, but again, so do many people. She was bright, lovely, and gentle. Meeting her and Alison shattered my stereo-

types about alcoholics—and about alcoholism.

One of my activities this summer was accompanying new Womanplace clients to Cambridge City Hospital and the Welfare office, both to lend emotional support and to teach them the transit system. I would try to keep conversation going, to make them more comfortable. Many of them told me a lot about themselves. As I listened, it became apparent to me that it was not a lack of willpower or desire that prevented these women from staying sober. They hated their drinking. They knew what was happening to their lives, and in their sober moments they knew how much they were hurting the people around them. The feeling they expressed to me was powerlessness; they were absolutely unable to stop drinking without help.

I learned that society in general thinks of alcoholism as a moral problem, a view that seems to affect women more than men. It's socially acceptable for a man to go out drinking with his friends and even to get drunk. When a woman does the same thing, she's considered disgraceful. If there was anything the women at Womanplace had in common besides their alcoholism, it was self-hate. Many of the women I met this summer, even though they were in a halfway house for alcoholics, had trouble accepting their problem—some still tried to deny it.

In the gastrointestinal pathophysiology course I took this fall, we studied many diseases that can be a consequence of alcoholism, such as pancreatitis and cirrhosis of the liver. One of the first treatment recommendations was "abstinence from ethanol." I was amazed that our teachers would simply say that and move on. Didn't they know what a huge and awful idea "abstinence from ethanol" is to an alcoholic? The women's reasons for drinking were as individual and complicated as they were. Alison, for example, had been told many times to stop drinking, but before she came to Womanplace, she was unable to beat her physiological addiction, much less cope with the upheaval abstinence would cause in her life.

At Womanplace, I discovered that the world that greets the newly sober alcoholic is harsh. Alcoholism hurts one's professional life; many recovering alcoholics have lost their jobs and have very little money. Their family and friends—if not long gone—begin to let out their pent-up anger and hurt once the alcoholic is sober and "back to normal."

Family counseling was one part of the Womanplace program that both the women and their families dreaded. The family of one woman I'll call Mandy was especially resistant. As far as its members were concerned, Mandy was responsible for all the family's problems, and they wanted nothing to do with her treatment. Her drinking was her own fault, they said, and they didn't see why they had to be involved. Fortunately, not every family was like Mandy's.

Many of the women at Womanplace were depressed, and the majority of them were unable to deal with any kind of stress. One woman came into my office upset to the point of tears because she had to go to an AA meeting and she had only 45 cents in change, but the bus fare was 50 cents. I got up, opened the petty cash box, and handed her a nickel. She looked at me as if I had saved her life.

If there was anything the women at Womanplace had in common besides their alcoholism, it was self-hate.

Women with children, and those who, like Alison, had obvious physical problems, had clear reasons to stay sober—reasons some others, like "Joan," lacked. Joan was a cynic, with a dry sense of humor. Warm and friendly, she made newcomers feel welcome. This stay was her second at Womanplace, and she left again while I was there: she just walked out one day and never even came back for her clothes. I wasn't surprised, for Joan had made it quite clear that being sober wasn't for her. She was having a tough time finding a job, her family was not supportive, she didn't find AA meetings helpful, and she missed her lover, who was an alcoholic. So Joan went back to her lover and the life she was used to. There just wasn't a good enough reason for her to stay sober.

I also learned this summer that alcoholism is not hopeless. People do get better; it is possible, with counseling, support from AA or some other source, and often medical help, for them to stop drinking and put their lives back together. It was wonderful to watch women at Womanplace grow calmer and more confident, get excited about their jobs and their futures, make peace with their families, and make new friends. Once an alcoholic is in treatment, the prognosis is good; the problem lies in getting and keeping him or her there.

This summer left me with many more questions than answers about alcoholism, but as a result of the experience I will be much more sensitive to the warning signs of alcoholism and much more knowledgeable about effective treatment than I could possibly have been without it.

I wish every medical student could have the opportunity I had, but that's not possible. What is possible, however, is to teach more about alcoholism in medical school. Considering that alcoholism affects nearly 70 million Americans (according to a recent *New York Times Magazine* article) and that it causes damage to almost every organ and system in the body, there is very little taught about it as a disease. If medical students were taught even a little bit more, perhaps more alcoholics would begin to get the care they need—and deserve. □

St. Francis House

by Janet Kinnane '88

Abraham was a big, burly old man who walked the streets with a burlap bag flung over his shoulder. He was bearded and unkempt, a character in my rural hometown when I was growing up. I am not sure if his name really was Abraham. No one knew where he lived, or whether he had family or friends. He was always alone. Occasionally I saw him at the general store exchanging empty bottles for cash. I kept my distance, perhaps because of his odor, perhaps due to fear. One winter Abraham died, along with the

mysteries of his life.

Abraham was a curiosity rather than a concern to me. As a child, I did not know others in his predicament. But last summer I was often reminded of Abraham while working at a shelter for the homeless in Boston's Combat Zone. There are many Abrahams in Boston—some 8,000 to 10,000 homeless people roaming the streets, collecting aluminum cans, "stemming" change from passers-by, or just getting by on their meager benefits (General Relief, Supplemental Security Income, and Social Security).

St. Francis House, a daytime shelter for adults, does not offer overnight accommodations. It is an outgrowth of a church breadline which expanded to a large building at 39 Boylston Street. Serving a noontime meal is still its focus, but now the center offers a daytime refuge for those who want to get off the streets. It also offers counseling, clothing, medical care, and advocacy and support.

Following the staff's recommendation, I spent my first week in the shelter in and around the dining room, getting to know the guests and staff. That did not seem too difficult, I thought—but I had not anticipated the jolt to my senses. The poorly ventilated, low-ceilinged dining room seats 100; the assortment and range of odors overwhelmed me. I forced a smile while breathing through my mouth. The combination kept me from gagging, but made speech virtually impossible. Though some guests resembled Abraham, many were young men, many were women, and many were well groomed. There was no code of appearance that signified homelessness. There was a diversity in size, shape, color, sex, and age.

My duties as a "hospitality staff person" in the dining room were to chat with guests, defuse any potential trouble, and facilitate the serving of the meal. That first week I felt completely inadequate. I inched away from the tables and guests, thinking only of the breath of fresh air I might get if I went outside. A guest asked me if it would be all right to eat lunch with evil thoughts in his mind. I had no answer. Another asked me for pepper—a request with which I was happy to comply, since it sent me into the kitchen, a respite from the congested dining room.

I am not sure how I became accustomed to the odors. Maybe they faded as I got to know the people, to see them as individuals with lives at least as complex as my own. As the summer progressed, I became less a voyeur and more a participant at the shelter.

I worked with the nurse practitioner, the alcoholic counselor, the clothing distributor, and the Robert Wood Johnson health team which visited St. Francis House twice a week. I spent a lot of time talking with the guests, giving them what help I could. Though I didn't observe the causes of homelessness—poverty, lack of affordable housing, and inadequate treatment facilities—I did see its effects:

Darleen, the mother of 10 and grandmother of 17, is a 79-year-old widow who was burned out of her house in Charlestown. She comes to St. Francis House for food, company, clothing, and Kwell shampoo to rid herself of lice.

Cheryl came to St. Francis House for maternity pants. She is 25 years old and was seven months pregnant. She told me she had lost her three previous children to the state and had not planned to have another child. Whenever I found maternity clothes, I put them in a locker for Cheryl.

George formerly counseled alcoholics. Now, at 32, he is divorced from his wife, separated from his children, and an alcoholic himself. As I drove him to a detoxification center, he confessed that because of his addiction, he wasn't able to provide for his children the way his ex-wife's new husband could. But he missed them very much.

Mary came to the clinic one day to soak her infected foot. I had seen her before in the dining room with her husband, boyfriend, and two adolescent sons. They live together in an automobile in South Boston. While Mary soaked her foot, I soaked the cigarette burns on the hand of her 12-year-old son Paul.

Chuck sits outside St. Francis House most days with a bottle of vodka and a few drinking mates. He is a World War II veteran. A counselor and I convinced him one day to go to the hospital to have his gangrenous and maggot-infested feet treated.

In the Boston Common graveyard, one can snuggle up against a headstone on the side of an incline, out of the wind. One homeless couple regularly sleeps there. The fire escape at St. Francis House, accessible only to agile climbers, is employed by some of the younger homeless women at night as a haven from men. One morning a woman who had fallen off the fire escape came to the clinic to have her arm looked at. Another morning a staff member noticed a man asleep in the trash dumpster. He was wearing an overcoat of the same gray color of the trash bags—camouflaged in the garbage.

When I drive to Route 93, I see a crowd of people lined up outside Boston City Hospital. The first 250 of them will board a bus to the city-run Long Island Shelter. The rest must sleep in abandoned buildings, under highway overpasses, or outside—somehow shielded from the wind and potential muggers. More than once I have driven through Kenmore Square at night and seen homeless urban campers stretched out on the cement benches under the highway. There is only one shelter bed for every 10 homeless people in Boston. Now, as the days grow colder and shorter, I wonder where the people I knew at St. Francis House are spending the nights. □

Martha Eliot Health Center

by Andrea D. Ewing '88

When I first heard about the Urban Health Project, my feelings about Harvard Medical School improved. I had become somewhat disillusioned during my first few months at HMS because of the lack of organized involvement in neighboring communities. Community activism has been an integral part of my life since childhood. My mother is a strong, active woman who stressed the Biblical principle "to whom much is given, much is required." My siblings and I grew up feeling indebted to our family and community.

That deep sense of responsibility to the people around me continues to direct my thoughts and activities as an adult. At HMS, I was feeling so insulated and cut off from reality that I began to seek opportunities to get my hands dirty and *do* something.

The Urban Health Project was an answer to my prayers.

I eagerly obtained a UHP application and glanced over the list of possible placements. My attention was immediately riveted by one: the pediatric clinic of the Martha Eliot Health Center. MEHC is a neighborhood health center in the Bromley Heath Project in Jamaica Plain, right in HMS's front yard. The center serves a mixed community of low-income black and Hispanic families. Finally, I thought, a chance to work with people to whom I feel some sort of emotional and cultural connection.

I did not anticipate that working in the clinic would be much of a cultural challenge for me. I had grown up in a lower-income black community, had had a good deal of exposure to Hispanic populations in high school and college, and was delighted—and apprehensive—at the prospect of speaking Spanish again after a five-year hiatus. I would have no real transition to make, right? Wrong! Instead of being 60 percent Hispanic and 40 percent black, as I had been told, the clinic's population seemed to be 90 percent Hispanic and 10 percent black, with 90 percent of the Hispanics speaking only Spanish. To complicate matters further, the Spanish accents all differed from one another.

I had been at the clinic not even 10 minutes when a young mother came up to me at the desk and asked, "Do you speak Spanish?" I answered in the affirmative. When she finished speaking a few minutes later, my head was spinning. I had understood three or four catch phrases, but the substance eluded me. She spoke so fast! I quickly went for help and made a mental note to pull out those dusty Spanish grammar books. Thank God for the staff and clients at MEHC, who encouraged me, ignored my grammatical blunders, and welcomed me with open arms.

My job description was somewhat vague, and I didn't know quite what to expect at the clinic. I knew I was going there to help people and advocate change. Little did I know how much these people would change me.

My supervisor, Marta Killner, MEHC director of pediatrics, was content to have me just hang around for the first few weeks. I spent most of that time in her office, watching her perform well-child check after well-child check. I weighed kids, held them down while she looked in their ears, and consoled them when they cried, but mostly I just listened. I listened to Dr. Killner as she asked the typical questions about appetite, activity, and sleep patterns—and the not-so-typical questions, such as, "Has your house been de-leaded yet?" and, "Have you been able to find a job?"

I listened to the parents express their frustrations about the present and their hopes for a better future. One mother told me, "It is so wonderful that you will be a doctor. We need more doctors like you who will care what happens." It was flattering, but her words were terribly sobering. Physicians with a sense of commitment are the hope of the poor and the underserved; I take this calling more seriously now than ever.

I listened as the doctor asked the typical questions—and the not-so-typical ones, such as, "Has your house been de-leaded yet?"

The most heartwarming part of the office encounters was watching the kids—all of them gorgeous—who repeatedly stole my heart with their actions and words. Talking with parents and kids helped me appreciate the challenges these families face with scanty financial and social resources. I identified with their struggles in the face of poor nutrition and unsafe housing; more important, I learned to appreciate their resilience and strength.

Watching Dr. Killner in action helped me see how important it is to listen to patients and show them that you care what happens to them. One mother brought in her child for a follow-up check for an ear infection, and during the examination told Dr. Killner about her difficulty in getting her home de-leaded. Dr. Killner spent the rest of the morning calling the responsible agencies; by noon, that home was scheduled for de-leading.

Though I learned a great deal during those first few weeks, I was also frustrated. I had come to the clinic to benefit these families, but so far I felt I had done nothing for them. After only one year of medical school, I was not prepared to do clinical work.

Dr. Killner suggested that I write and design a number of health-education pamphlets addressing issues such as burn and poison prevention, asthma, diarrhea, and lead poisoning. She felt the existing literature was too difficult for the families at the clinic to read, with too few pictures and too much information.

I initially found this project discouraging—after all, I came to the clinic to work with people, not paper. Then a toddler who had been a clinic patient was accidentally poisoned by medication left within his reach. He was not expected to recover. Realizing how important these pamphlets could be, I went about organizing them with new fervor.

I had to suspend all my scholarly writing abilities to make these pamphlets simple enough for almost anyone to read and understand. I enjoyed the challenge and the chance to be creative. After writing and re-writing, and drawing and re-drawing burning buildings and bottles of Ipecac syrup, I finally developed a set of 12 pamphlets. Maybe they will help prevent accidents like the one that took the life of young "Juan."

No account of my summer experience would be complete without mention of my preceptor, Paul Wise, instructor in pediatrics at Children's Hospital. He listened to my complaints about my placement and the project as a whole—too little structure and supervision, no role for a non-clinical person at the clinic—and suggested ways to improve the situation. He helped me put my experiences at the clinic in perspective, and encouraged me to look beyond, to the societal issues and policies that affect poor people's lives. This view helped me avoid becoming discouraged by the problems I saw, but made me increasingly angry at society at large.

The most pressing problems in health care today are not organic diseases one can identify and stage under a microscope, but pathological processes inherent in our society, such as poverty, inequitable access to health care, and lack of effective social service programs and policies. I am now more anxious than ever to attain a position from which I can attack global problems, in order to effect local change. □

South Africa's 10 homelands and four English-speaking medical schools. There are also three Afrikaans-speaking medical schools, at the universities of Pretoria, Orange Free State, and Stellenbosch. Where possible, the non-contiguous areas of one homeland are indicated on the map with straight lines.

Access to Medical Education in South Africa

STATE OF AMBIVALENCE

by Mitchell Spellman

In July 1985, Mitchell Spellman, Harvard Medical School dean for medical services, and Jane Schaller '60, chair of the Department of Pediatrics at Tufts University School of Medicine, traveled to the Republic of South Africa on a fact-finding mission. As representatives of the two universities, they investigated the access of blacks, Indians (Asians), and coloreds (mixed race) to medical education. Spellman and Schaller were nominated for the mission by the presidents of Harvard and Tufts in response to the proposal of a new non-profit, Washington-based entity called Medical Education for South African Blacks, Inc. Known as MESAB, the initiative is the brainchild of former US Foreign Service couple Herbert and Joy Kaiser, who accompanied Spellman and Schaller on the site visit.

Institutions which have agreed thus far to collaborate with MESAB in exploring prospects for sponsorships of health and medical education programs for South African blacks and other non-whites are Harvard, Johns Hopkins, Tufts, and Stanford universities. Two representatives from Johns Hopkins had previously made a site visit to South Africa with the Kaisers. The travel expenses of the university representatives were underwritten by the sponsoring schools; the Kaisers' travel has been supported by a grant from the Rockefeller Foundation.

The following account of the July trip is adapted from a report Spellman wrote for Harvard president Derek Bok. It was drafted as background for an internal review at Harvard of the MESAB proposal. All information presented here was current in July.

This report is a summary of my observations and impressions during an intensive three weeks of conferences, interviews, and interactions with ministers and officers of the South African national government; academic administrators, faculty members, and students at the four major South African English-speaking academic medical centers; ecclesiastical and community leaders; health professionals; journalists representing the black press; and whites, blacks, and other non-whites from the spectrum of South African society.

For approximately half our stay, we were occupied with meetings in Pretoria, the administrative capital and seat of the executive branch of the national government, and in the Transvaal. We conferred with representatives of ministries of the central government, and examined the programs of the Medical University of Southern Africa (Medunsa) near Pretoria. We also observed the organization and administration of health services within the black tribal homelands contiguous with Transvaal Province, where impoverished populations reside in a Third World setting—in striking contrast to the industry, advanced technology, and affluence of urban South Africa. Later in July, we conferred with representatives of the medical schools of the universities of Cape Town, Natal, and the Witwatersrand; with professional, industrial, labor, and religious leaders; and with journalists in Cape Town, Durban, and Johannesburg.

Medical University of Southern Africa (MEDUNSA)

Our delegation first visited Medunsa, established by the Parliament of South Africa in 1976 to train black health professionals (although statutory authority was granted to enroll students of all ethnic groups). The university, situated about 18 miles northwest of Pretoria and near the border of Bophuthatswana, comprises faculties of Medicine, Dentistry, and Veterinary Science. The first medical students matriculated in 1978 and graduated in 1982. Degree-granting programs in nursing, physiotherapy, and occupational health were either initiated or implemented through consolidation of existing programs. The university is affiliated with district clinics; an animal hospital; and Ga-Rankuwa Hospital, which functions as a regional referral center for blacks in southern Africa.

Both the black and white teaching hospitals in South Africa are owned and funded by the provincial governments, which also underwrite the salaries of the clinical faculties at the affiliated English- and Afrikaans-speaking medical schools. Ga-Rankuwa Hospital at Medunsa is the only major teaching hospital that is owned and funded by the central government.

On April 1, 1984, Parliament granted autonomy to Medunsa in all matters but the appointment of the rector (the chief academic officer) and the admission of non-black students. Medunsa receives applications from black students throughout South Africa and from other African countries—including Angola, the Congo, and Zaire. In common with other autonomous universities, Medunsa may admit students from other population groups as long as government

approval at the ministerial level is obtained in each case. The minister of Health and Welfare informed us that the required prior ministerial approval for admission of whites to Medunsa and blacks to the white medical schools at Cape Town and Witwatersrand universities would be rescinded in 1985. This action means curtailment of the statutory prohibition of multiracial admissions at three of the four English-speaking medical schools.

At Medunsa, we consulted the rector; deans of the faculties of Medicine, Dentistry, and Veterinary Science; chairmen of the major medical departments and nursing; the coordinator of collective first-year training; professors and senior lecturers from non-medical disciplines; the librarian; and the superintendent and senior staff of Ga-Rankuwa Hospital.

Although the sessions at Medunsa occurred during the week preceding President P.W. Botha's declaration of a state of emergency, the students were already "on strike"—that is, boycotting classes. Members of the faculty and staff generally attributed the tension on campus to the climate of national unrest among blacks, Indians, and coloreds. More specifically, the strike was the culmination of grievances against the professor and chairman of the Department of Anatomy, an Afrikaner, who allegedly exhibited racist attitudes during lectures.

The Medunsa students declined to meet with us, ostensibly because doing so would have been construed as cooperating with the university administration at a critical juncture in their negotiations. In a rather furtive session, one black woman medical student appealed to us for assistance in obtaining funds for travel and housing so she could enroll in an elective clerkship at a teaching hospital in England. We held an informative meeting with four black registrars (residents) at Ga-Rankuwa. Three were graduates of Medunsa, the other a graduate of University of Nigeria. Of the approximately 100 registrars at Ga-Rankuwa, 21 were graduates of Medunsa. The remainder were white.

Only one African (black) physician at Medunsa had attained the rank of professor and chairman (of OB-GYN). A small number of blacks do hold academic appointments at more junior levels. The first black in the history of South Africa to qualify as a psychiatrist was educated at Medunsa and is a recent graduate of the residency program at Ga-Rankuwa. His appointment as a lecturer/consultant in the Department of Psychiatry at Medunsa is pending.

Despite the efforts of Pretoria, Medunsa remains an academic outpost scorned and ridiculed by blacks, whites, and others resolved to abolish apartheid.

Administrators and faculty at Medunsa were preponderantly Afrikaner graduates of University of Pretoria, a leading Afrikaans-speaking institution. The Medunsa faculty is of uneven quality, according to its members, but includes outstanding academic physicians, scientists, and scholars. They acknowledged the difficulties of recruiting faculty for a black university and the contempt of the Afrikaans- and English-speaking universities for Medunsa. However, the power and purse of the Pretoria government have been steadfast in support of Medunsa. There is firm assurance of funds, for example, for construction of a modern teaching hospital of 1,200 beds to augment Ga-Rankuwa's beds and services. The Medunsa facilities are new and modern, albeit significantly underscaled

MESAB Background

Medical Education for South African Blacks, Inc., was established in February 1985. The goals are to mobilize private support for training black South African health professionals; improve the health status of black South Africans, who bear great burdens of disease and disability; address both current needs and those of a post-apartheid society; and respond to appeals from a broad range of the South African black leadership.

Some basic facts about the health status of blacks in South Africa:

- Infant mortality is estimated at well over 100 per 1,000 (for whites it is 13.9).
- Sub-clinical malnutrition is prevalent, as are malaria, typhoid, TB, and gastroenteritis—preventable diseases virtually eradicated among whites—especially in rural areas.
- Fifty-five percent of all deaths occur between the ages of one and five.
- Life expectancy has been estimated at about 15 years less than that of whites.
- Out of a population of over 23 million Africans there are perhaps 500 physicians, only 17 dentists, no veterinarians, and a negligible number of paramedicals. The ratio of trained African nurses to the population is higher, but still inadequate.

Schooling for blacks is vastly inferior to that available for whites. Four-fifths of the black teachers have not completed high school themselves. Consequently, few blacks can successfully compete with whites for entry into medical schools even when other political constraints are absent. Failure rates for those who do gain admission are high.

MESAB's projected program for assisting with education of health professionals falls into the following broad categories: scholarships; outreach programs to bring university faculty and students to clinics and hospitals in rural or peri-urban areas; training programs in primary care disciplines; remedial programs in science, math, and English; library services; cooperative research programs between South African and US medical institutions; and South Africa/US faculty and student exchanges.

—Herbert Kaiser,
MESAB president
Joy Kaiser, MESAB executive vice president

for a medical school accepting 120 students in its first-year class and which ultimately will enroll 200 in each class.

In my view, the teaching loads are excessive and the failure rates of black medical students here and throughout South Africa, ranging between 25 and 50 percent, or more, are unconscionable.

The academic programs at Medunsa in primary care, community health, and family medicine are unique. Only Medunsa and University of Bloemfontein (Afrikaans-speaking), for example, have awarded departmental status to family medicine and allocated full-time equivalent academic positions in this field. The departmental faculty of family medicine assured us that the subject commanded a larger fraction of the curriculum at Medunsa than at other medical schools in South Africa. All Medunsa medical students are required to take a bloc in rural medicine.

The goal of Medunsa's family medicine program is to train physicians with comprehensive skills relevant to the needs of rural medicine in the context of African culture, language, and values. The department administers a training program for generalist nurse practitioners, and recognizes the primary care nurse as the essential core of an effective rural health care system.

The quality of education at Medunsa is acceptable by international standards, as evidenced by the recommendation of the British General Medical Council in 1984 to accept the degree of Bachelor of Medicine and Bachelor of Surgery (MBChB) awarded by Medunsa as a qualification for limited registration (licensure) in the United Kingdom. The administration and faculty have demonstrated dedication, zeal, and absorption in institution-building. Countervailing influences are the paranoia and hostility endemic in a rigidly segregated society confronted with compelling forces for change. The latter are incomprehensible to some well-meaning Afrikaners whose motivations for good and for equity are derived from a colonialist perspective. Despite the efforts of Pretoria, Medunsa remains an academic outpost scorned and ridiculed by blacks, whites, and others resolved to abolish apartheid.

In my judgment, Medunsa is disabled and its relationships are compromised because the institution was conceived as a creature of the Pretoria government and apartheid. In a cordial private meeting in Johannesburg, the chancellor of Medunsa, a distinguished (white) layman of Afrikaner descent, conceded Medunsa's impairments. He had resolved to obtain permission of the central government to admit white and other non-black students. If his appeal was denied, he informed us, he planned to resign. (University chancellorships in South Africa are honorary posts awarded to citizens of high standing and achievement who are favored by the incumbent national administration.)

Pretoria

Our meetings in Pretoria involved conferences with Professor Willie van Niekerk, minister of Health and Welfare; Mr. Sam de Beer, deputy minister of Education and Training (for blacks), and Professor F.P. Retief, national director of General Health and Welfare. Professor van Niekerk was formerly a professor and head of OB-GYN at University of Stellenbosch, an Afrikaner university in the Cape area. Mr. de Beer is a member of Parliament and a former member of the clergy of the Dutch Reformed Church. Professor Retief is a former academic internist, Rhodes Scholar, professor of medicine at Stellenbosch, and, as the former rector and vice-chancellor of Medunsa, largely responsible for the development of this institution.

It was clear in all our interactions that in Pretoria a "unitary system" (majority rule by one person/one vote) was unacceptable and non-negotiable.

These sessions included a discourse by government representatives on the nature of the global communist conspiracy and its pertinence to the unrest in South Africa. Our discussions focused on the challenges of adapting Western medicine to the problems and needs of South Africa as a lesser-developed nation, the role of government in administering certification and accreditation, constraints on government spending imposed by the current recession in South Africa, considerations in recommending appropriations for Medunsa, confirmation that the national government has abolished the requirement that white universities obtain permits for admission of black medical students, identification of opportunities and priorities for collaborative research involving South African and American health educational institutions, and the special need of South Africa for epidemiologists and biomedical scientists in fields dominated by Ph.D.s.

National statistics documenting mortality and morbidity among South African blacks are either unreliable or nonexistent. Millions of blacks residing in the self-governing homelands bear the greatest burden of disease, disability, and premature death, but are not considered to be citizens of South Africa. Consequently, sensitive indices of health such as infant mortality and measures of the status of maternal and infant health apply only to whites and the uncertain fraction of blacks and other non-whites who are actually counted within the South African townships, rural settlements, and so-called "black spots" (discrete and randomly situated black dwellings on the perimeters of cities, suburbs, and farms).

Often the disincentives and risks for blacks of being tallied in a census outweigh the benefits. Black population and health statistics are inexact, at best—and the reporting of births, disease and its complications, immunizations, morbidity, mortality, and health-related data by blacks is irregular.

The implications of data on the paucity of resources for the education of blacks at the primary and secondary school levels are appalling. For the uncounted population of black children which increases at a rate estimated at 50,000 to 60,000 annually, the goal of Pretoria is to build 15 new schoolrooms per day. These facilities would serve only the annual incremental increases. The supply of teachers for blacks is 46,000, including 4,000 whites, of whom only two percent hold degrees, 22 percent have not completed secondary school, and 78 percent do not have the course requirements for matriculation at a university.

Mr. de Beer recognizes that the number and distribution of teacher training colleges are inadequate, and he has assigned a high priority to resolving the deficit. Except in Soweto

and a few relatively sophisticated black urban townships, education for blacks is not compulsory. In the current turmoil, he said, black teachers are oppressed and intimidated by their students. He believes Reverend Alan Boesak could "sacrifice two generations of youths" by inciting elementary and secondary school students to participate in repetitive, violent public demonstrations as a tactic for escalating concern of blacks about inequities.

Mr. de Beer cited an unpublished study which concluded that the poor quality of education for blacks is not a root cause for the current social unrest. He reported that the government was distressed by the exploitation of children as pawns for fomenting a revolution to advance the political aims of radical blacks. Meaningful constitutional reform and removal of statutes for influx control, several people in the government claimed, were either in process or soon to be initiated. However, it was clear in all our interactions that in Pretoria a "unitary system" (majority rule by one person/one vote) was unacceptable and non-negotiable.

The Homelands

We spent three days touring Ka Ngwane, Gazankulu, and Lebowa, three of the 10 national states, or tribal homelands. These self-governing states were created by South Africa as autonomous jurisdictions for blacks with a tribal or ethnic identity and accorded the formal status of a national government. The homelands are not recognized by the United Nations or any other country or international body. The homeland boundaries demarcate arid, desolate lands lacking sources of water and devoid of any valued natural resources. Without adequate schools, modern transportation, skilled manpower, and substructures supportive of commerce, industry, and community health, the national states have remained dependent upon appropriations by South Africa. One of the homelands, Venda, reportedly receives from Pretoria as much as 75 percent of the revenue expended annually by its government.

Migrant laborers gravitate from the homelands to work in urban centers in South Africa, where they are domiciled in filthy hostels located in Soweto and other black townships or labor camps at industrial sites. In the homelands, primitive housing, crowding, squalor, poverty, social disruption, alcoholism, and violence are the main causal factors for disease, trauma, disability, and premature death.

Homeland governments' dominant concerns relating to the health of their populations are infectious disease (tuberculosis, gastrointestinal infections, rheumatic fever, and parasitism), malnutrition, prematurity, and issues of maternal and child health.

The chief minister of Ka Ngwane observed that 100,000 residents, one-fourth of the population of this homeland, were resettled to Ka Ngwane by Pretoria from other parts of the country through imposition of "influx control" during the previous seven years. Schools and social and health services are strained beyond coping. He appealed for our help in developing comprehensive community health programs for disease prevention, health education and promotion, parenting, and planned parenthood.

Rural hospitals and clinics at the villages of Themba in Ka Ngwane, Malamuele in Gazankulu, and Groothoek in Lebowa exemplify the exorbitant cost and inefficacy of applying First World curative medicine in Third World situations. Health systems in the homelands administer services which are dependent upon the availability and deployment of physicians and referrals within traditional medical specialties—services which are deficient in primary care and prevention. Moreover, though Western research and clinical trials have few effective modalities for dealing with tropical disease, exotic infections, and malnutrition on a scale beyond the experience of the First World, the homelands commit resources to relatively complex procedures and technology. The most hopeful signs for the future are the outreach programs, sponsored by Medunsa, that support affiliations with rural hospitals—the 675-bed facility at Themba, for example—and clinics.

The cooperative arrangements between Medunsa and the contiguous homelands enable the Faculty of Medicine to assign registrars and members of the faculty from the departments of Community Health, Family Medicine, Pediatrics, and OB-GYN to these rural facilities. Recent graduates of Medunsa serve as medical officers at health facilities in the homelands as payback, year for year, for the bursaries each homeland provides to underwrite medical education for its citizens. Most of the graduates then seek training in specialties which commit them to urban practice patterns and urban lifestyles.

Universities of Cape Town, Natal, and the Witwatersrand

Cape Town, the first medical school in South Africa, and Witwatersrand at Johannesburg are distinguished international research academic medical centers. The University of Natal Faculty of Medicine at Durban, whose first dean was an American missionary physician, Allan Taylor, was created to train blacks. It was founded in 1951 and then appended to the major regional, white, English-speaking university at Durban. The intent of the central government was to restrict admission at Natal to Zulus, the largest tribe in South Africa, and to curtail the admission of blacks and coloreds to the medical schools at Cape Town and Witwatersrand. The dean of the Faculty of Medicine at Natal, Professor N. Kallichurum, is an Indian, an alumna of Natal, and the first non-white, female dean at the university.

Because from the outset the number of qualified Zulus and other African applicants for admission to Natal was inadequate, Indians and coloreds were accepted for the places not filled by blacks. Currently, the classes of 120 students are composed of Indians (60 percent), blacks (most of the remainder), and coloreds (5 percent or less). Aggregate failure rates are more than 20 percent, mostly among blacks. Student financial aid is a critical need. Facilities are crowded and obsolete, although hospital equipment is modern and, in the case of radiology and cardiology, state of the art.

King Edward Hospital, Natal's principal black teaching hospital, consists of more than 2,000 beds and support services. The hospital and other clinical units are contained in an incredible sprawl of one-story buildings which, like the other major black teaching hospitals, Ga-Rankuwa and Baragwanath (at Soweto), resemble a collection of unsightly barracks and warehouses.

In addition to King Edward, there are two other large teaching hospitals in Durban affiliated with University of Natal. The school has

proposed the construction of an additional modern teaching hospital on or near the university campus. The dean spoke to us of her intent to terminate an affiliation with a community hospital in Durban that denies access to black faculty, registrars, and medical students.

The Research Institute for Diseases in a Tropical Environment, an extramural institute of the Medical Research Council (the South African equivalent of the U.S. National Institutes of Health), is based at Natal. It is an important national resource for education and research in tropical disease. The Natal faculty is confident that in clinical teaching the medical school is competitive with Cape Town. Among the strengths of Natal, the dean identified distinguished investigators in parasitic diseases (amebiasis and malaria), hypertension, and diabetes. The facilities at the medical school are acknowledged to be the worst in South Africa.

Dr. Schaller and I conferred privately with a group of African and Indian medical students at Natal and then with faculty members who represented the newly formed, multiracial National Medical and Dental Association (NAMDA). The students told us they regard the MESAB initiative as irrelevant to, and incapable of helping with, the responsibility of South African blacks to address the issues of health, poverty, ignorance, and deprivation. They insisted that MESAB move together with non-white students to replace the government in Pretoria controlled by the National Party.

The NAMDA representatives were willing to consider proposals developed by MESAB, and to cooperate with programs and initiatives acceptable to NAMDA, the United Democratic Front, and other South African organizations engaged in the struggle to abolish apartheid.

At the universities of Cape Town and the Witwatersrand, non-whites are housed in dormitories on campus in defiance of South African laws requiring non-whites to reside in separate, segregated townships. Notwithstanding the fact that all universities in South Africa are supported by the national government and are categorically public universities, the members of the faculty of medicine at Cape Town and Groote Schur (the affiliated provincial teaching hospital) receive substantial private funding for endowed chairs, academic units, clinical services, construction, and research. Overall, the Cape Town medical institutions seem to be particularly resourceful in reducing dependence on support from Pretoria and the Cape provincial government.

The University of Cape Town Faculty of Medicine has superb facilities, arguably the finest in South Africa. In addition to Groote Schur (approximately 2,000 beds) and the Red Cross Hospital (a children's hospital), a magnificent comprehensive general hospital of more than 1,000 beds, contiguous with Groote Schur, is under construction. By virtue of history and geography, Cape Town is culturally diverse, has the smallest constituency of urban black townships in South Africa, and is surrounded by comparatively large townships occupied by coloreds. Only one black medical student, a first-year student with a Ph.D. in nuclear physics, is enrolled at Cape Town. There is one black registrar (in OB-GYN) at Groote Schur. The rest of the university has a larger representation of blacks, coloreds and Indians.

The aggregate national failure rate for blacks in South African medical schools approximates 50 percent, more than double the failure rate for whites.

University of the Witwatersrand is appraised by residents of Johannesburg as the greatest academic resource in South Africa. The Witwatersrand Faculty of Medicine is affiliated with Johannesburg General Hospital (2,000 beds), which is its principal provincial teaching hospital, and with Baragwanath Hospital (2,700 beds). The latter, situated in Soweto, is the largest black teaching hospital in the world.

Johannesburg General is understaffed with nurses, operating at an occupancy rate of 50 percent, and confronted with a fiscal crisis exacerbated by the recession. Wits has access to far more than 1,000 additional hospital beds at Hillbrow, Coronation, and JG Strijdom. The large size and low census of these hospitals reflect overbedding and maldistribution of beds for whites in Johannesburg and the Transvaal Province. In contrast, administrators at Baragwanath and other black hospitals reported occupancy rates of 120 percent or more, which was achieved by the placement of two or more infants in bassinets and deployment of adult patients on pallets between or beneath regular hospital beds.

By some estimates, 60 percent of the clinical teaching for all Wits medical students occurs at Baragwanath, yet black and other non-white Wits medical students and registrars in Johannesburg (and elsewhere in South Africa) are prohibited from attending classes and rounds at affiliated white hospitals. Consequently, nonwhites have been denied learning opportunities involving career tracks for which the training programs are based exclusively within facilities for whites. Black and Indian registrars at Baragwanath informed me that Africans, Indians, and coloreds who aspire to qualify in certain specialties—clinical immunology, for example—find the white hospital setting a barrier to training.

The Wits faculty of medicine has resolved to admit classes in the future composed half of Africans (blacks) and half of whites and the other non-blacks, the latter to include a representative fraction of Indians and coloreds. Wits inaugurated an affirmative action program in 1985 with the matriculation of 35 blacks, 35 Indians, and a "few" coloreds in the first-year class. The 70-plus nonwhite students represent more than one-third of the total class of 200, in contrast to the approximately 10 or fewer blacks admitted annually in prior years.

The aggregate national failure rate for blacks in South African medical schools approximates 50 percent, which is more than double the failure rate for whites. Since 1980, Wits has offered the option of special tutoring and decelerated programs for blacks, but has encountered resistance because of the stigma of remedial programs in which enrollees are likely to be regarded as "duffers." The dean of the Faculty of Medicine at Wits, Professor Maurice McGregor, assured us that the faculty is committed to expanding the admission of black medical students, as rapidly as additional bursaries are available and the applicant pool enlarged, to half

of the entering class of 200.

Professor McGregor urged inclusion of Medunsa as a participant in cooperative programs and exchanges with American medical schools. As I understand his rationale, Cape coloreds are regarded as "culturally white," and efforts to assist African health professionals within the English-speaking Transvaal institutions (Witwatersrand and Medunsa) would be on a significantly larger scale than could be achieved at Cape Town and Natal. He emphasized the need at Wits to increase educational loans and the number of bursaries in order to sustain an expanded enrollment of black medical students. Virtually all black medical students at Wits are on bursaries. None of these is sponsored by the government; most are supported by grants from South African corporations.

The black medical students at Wits declined to meet with us. We interviewed a group of four white students representing the Medical Students Council who appeared to be strongly allied with the black students and shared with them aspirations for careers in primary care and rural medicine. However, they confirmed that most white medical students at Wits are attracted to careers as specialists.

Community Leaders and Black Journalists

Our meetings with the Most Reverend Denis Hurley, Catholic archbishop of Durban, and with the Right Reverend Desmond Tutu, Anglican bishop of Johannesburg, contributed different perspectives. Archbishop Hurley predicted an erosive, gradual process of change. He analyzed the nature of the schism within the black community as exemplified by the divergent views, styles, and conflicts of chief Gatsha Buthelezi (representative of Inkatha) and Reverend Boesak (representative of United Democratic Front).

In response to my question, Archbishop Hurley ranked South African urban centers in descending order of how liberal and tolerant each city is in governing relationships between whites and non-whites: 1) Cape Town; 2) Johannesburg; 3) Durban; and 4) Pretoria.

Bishop Tutu reflected with us about the state of ambivalence in South Africa. He commented that blacks hunger for and value education, yet black students demonstrate, perform acts that disrupt the educational process, invoke turmoil in the schools, and give credence to allegations that teachers are the embodiment of the enemy. He criticized Medunsa's remoteness from the urban community. He attributed difficulties in recruiting faculty to the institution's rural site.

Bishop Tutu regarded the linkage of Medunsa to University of Pretoria as a fundamental planning flaw, and was unimpressed with Medunsa as a creative experiment in rural medicine. He proposed that MESAB affirm measures for advancing political reform and at the same time embrace the interconnection of medicine and health with freedom and dignity, and with an enlightened (South African) national policy. He concluded that to obtain the endorsement of black South Africans, MESAB must be disassociated from the Reagan administration.

Black journalists in Johannesburg—including Percy Qoboza, a former seminarian and Nieman Fellow at Harvard (1975-76)—gave us insights on the harvest of devastation in the townships from rioting, arson, murders, and the radicalization of black children, adolescents, and parents. Qoboza lamented the unparalleled challenges to the survival of a free press. His family has been harassed and his household searched by police who are not accountable for their actions during the state of emergency.

I found the dilemma in South Africa expressed most poignantly in the grace and courage of Qoboza and others who confront a racist society which has debased institutions and human values.

Issues, Options, and Recommendations

There are bases for both negative and positive responses to the proposal that selected American universities collaborate with MESAB in assisting in the education and training of black and other non-white South African health professionals.

Factors contributing to a negative response include: 1) the judgment that educational initiatives are futile, given the incendiary climate and destabilizing influences in South Africa; 2) the conviction that, because the resources available are not commensurate with the magnitude of needs of South African blacks, the involvement of American universities would be an impotent expression of outrage and condemnation; 3) the potential insistence by some that MESAB and/or collaborating universities endorse disinvestment as litmus tests of credibility; 4) the inability to comply with demands by non-whites in South Africa to promote political action and accelerate reform of the Pretoria government; and 5) the perception that American research universities and academic medical centers committed to Western curative medicine are ill-adapted to address issues of medicine and health in Third World settings.

Factors in a positive response include the assumptions that: 1) the dimensions of the human tragedy in South Africa are valid concerns and challenges for Harvard in its role as an international university; 2) an endeavor which contributes to human development and health in the Third World and ameliorates the burden of illness borne by blacks in South Africa serves our national interests; 3) our efforts are acceptable to the prospective beneficiaries and that the risks of rejection are tolerable; 4) the opportunity for South African English-speaking and American universities to join in a common cause will provide for the former a pathway out of pariahdom and isolation; 5) educational initiatives will serve as a lever to displace barriers to education and training determined on considerations of race, color, religion, and/or political orientation; and 6) MESAB and other sponsors of educational programs will be contributing to the advancement of a post-apartheid South African society.

From my perspective, the assumptions behind a positive response are compelling justifications for our concerted efforts on behalf of black and other non-white South Africans. I recommend fund raising for scholarships and student loans, student and faculty exchange programs, and health manpower and faculty development programs—with priority assigned to fields of study to which non-whites are denied access in South Africa. We should search for sponsorship and for opportunities for collaborative research to reduce the burden of illness on black South Africans. Beyond the needs of professional education, there is a great need for privately sponsored programs to enrich education for blacks in South African elementary and secondary schools. □

Medical Student Diplomacy

Report on a Journey to the Soviet Union

by David Kreger

PHOTOS COURTESY OF MSIE

Soviet and Western medical students at a Kiev sports camp

In the fall of 1984, three students and a writer, two of them from Harvard Medical School, founded Medical Students for International Exchange (MSIE). They were David Kreger '87; Rob Saper '87, medical student liaison to International Physicians for the Prevention of Nuclear War; Sarah Braun, a UCSF medical student; and Gale Warner, a Boston-based freelance writer. Their first goal was to organize a medical student trip to the USSR in order to establish long-term relationships with their Soviet peers, promote medical student exchanges, and create a slide show of their experiences to "put a human face on the 'enemy'." (For more on IPPNW, see Pulse in this issue.)

In February 1985 the MSIE members told their plans to M.I. Kuzin, director of Moscow's Vishnevsky Surgery Institute, who was in Boston on a speaking tour. Bernard Lown, co-president of IPPNW, and Sidney Alexander '57, president of Physicians for Social Responsibility, were also at the meeting. "Kuzin leaned back," Kreger remembers, "opened his arms, and said expansively in English, 'You will be our guests in the Soviet Union.' We had invited ourselves and the Soviets had graciously accepted."

In preparation for the trip, MSIE sent letters and telexes requesting "informal meetings with Soviet medical students," including sample daily schedules featuring large blocks of time labeled "informal gatherings" and "free time." A fund-raising drive in Boston raised more than $7,000 from more than 100 individuals, mostly physicians. Kreger and Saper were awarded the Paul Dudley White Scholarship for International Travel from the Dean's Office of Harvard Medical School. Kreger is now delaying his clinical rotations for one year to travel in the US speaking about his experiences in the Soviet Union. He is also studying the public's image of the Soviets under the guidance of John Mack '55, HMS professor of psychiatry.

The first MSIE trip was launched in July 1985 with attendance at the Fifth Congress of IPPNW, held in Budapest.

Komsomol (Young Communist League) leader conducting the meeting at which we interrupted speech-making with conversation

The IPPNW Congress was a massive affair, involving 1,500 people from about 60 countries, with about 100 medical students from 20 countries, including Hungary, Czechoslovakia, East Germany, Poland, Bulgaria, and the USSR.

Though some of us found the scheduled sessions at the congress educational, I chose to take advantage of the unique opportunity to talk to students from socialist countries. We "talked shop," shared insights into our countries' political systems, offered our visions for how peace movements could lead to changes in government policies, and asked one another hard questions—all with freedom to admit our countries' shortcomings.

One future surgeon from Budapest privately told me he'd never want to join the Communist Party because of its stiff hierarchy, yet he is an editor of his university's newspaper and was an active worker at the congress. His good friend Eva, however, is in the party; in fact, she is vice-president of the youth section of the Hungarian Peace Council, the government-approved peace group, a demanding post she holds in addition to her medical studies.

Why does her group never publicly question the policies of Hungary or the Soviet Union? "We have tremendous debates in private, during our meetings with government officials," she replied. "The newspapers always say there is unity and agreement. But I've been to some of those meetings and, believe me, they can get pretty heated." Her dream is that Budapest will become a meeting place for people from the East and West. During the IPPNW Congress, her dream was coming true.

For me, the high point of the congress came on the last night. After a huge outdoor barbeque at a hotel in the hills of Budapest, a few students gathered for some impromptu singing. Soon a parade of some 40 students from nearly as many countries were following an American guitarist, in Pied Piper fashion, to a nearby open grassy field with a view of the city.

Two young doctors from Africa

led the midnight gathering in a spirited African chant, then asked everyone to sing their country's national anthem. Anthem after anthem peacefully echoed in the darkness, in language after language: Hebrew, Hungarian, Swahili, Spanish, Norwegian, Czech, German, Swedish, French. As people from each country stepped into the center of the large circle to take their turn, it became clear that we were celebrating both our diversity and our unity. For one night, on top of a mysterious hill in central Europe, we created the united world of our dreams.

The next day 22 exhausted and inspired medical students from the US, Canada, the Netherlands, New Zealand, and Australia retreated to the Hungarian village of Szentendre to prepare for the Soviet trip.

I had seen academician Kuzin at the congress, where he recognized me, broke into a big grin, and slapped me on the back, saying in English, "You will have informal meetings with medical students." He also said that one Soviet medical student and one doctor were going to travel with us after we left Moscow. Other than that, and the fact that Intourist had reserved hotels for us, we knew nothing of what was going to happen.

"The Soviets will show you only what they want you to see" was the conventional wisdom running through our minds. Would we be trapped on an Intourist schedule accounting for every hour, morning to night? Would we be watched? Would our meetings with students be stiff and formal? Would we be free to explore on our own? Would people speak their minds to us, or simply repeat the party lines? We did not know.

We set our expectations accordingly. Patrick Wedlake, from Texas, said he would be satisfied if he simply had honest eye contact with one Russian person.

On our first day in Moscow, we set off for the First Moscow Medical Institute, the country's foremost medical school. We were received by 12 students and the dean of the Pediatrics Department, Ludmilla A. Isaeva, and ushered into a conference room. On the wall hung a portrait of Lenin. Below was a color photograph, larger than Lenin's portrait, of a baby with soft big eyes peering out from under a blanket.

Dr. Isaeva told us of her recent trip to Texas and her generally warm reception there. With good humor, she demonstrated the frozen smiles of the few with whom it was not possible to establish an emotional connection. She spoke of international cooperation, exchange, and our shared humanity.

That we had organized our own trip amazed students we met at the International Youth Festival. One student was shocked that the US has no equivalent to Komsomol, the Young Communist League.

Dan Gunther from California later wrote:

She seemed to be speaking as she would to her family over a meal.... She was expressive, tender, compassionate, clearly embodying all the human qualities that are indispensible in a good healer. Yet she was a Russian! In my first experience with a person of authority in the USSR I expected efficiency, no small amount of pomp and bombast, perhaps veiled antagonism, and here I was steamrollered by a 60-year-old woman whom I am forced to describe as a cross between my finest medical school professors and my grandmother! Where were the hallmarks of the crushed human spirit?

The eye contact in the room was constant and electric. Worry or distrust evaporated quickly in the air of mutual fascination. Across the room sat a dark-haired woman whose rapt attention to her dean was repeatedly broken by locking eyes with me over a table laden with Russian mineral water and American notebooks and ballpoint pens. The ambivalent sense of anticipation and hesitancy felt somehow like a junior high school dance. Who are you? Can we meet and talk? Will we have anything to say?

Isaeva presented each member of our group with gifts and gave to our delegation as a whole a small reproduction of a statue, located near the school, that commemorates the Soviet doctors and nurses who lost their lives fighting the Nazis in World War II. In a short acceptance speech Dan acknowledged the sacrifice of the USSR in the war, which left 20 million dead and 35 million wounded. Our countries worked together to end that war, he said, and now must work together to prevent World War III. As he embraced the dean, tears welled in her eyes.

We then went to the International Youth Festival Club, where small tables, loud music, the ever-present bottles of mineral water (the trademark of citizen diplomacy in the Soviet Union), and about 35 medical students greeted us. In addition to the students we had just seen, there were East Germans, Czechoslovakians, and Hungarians. Their English, in general, was much better than our Russian. We spoke of our homes, schools, families, career plans. There was a level of intensity to the discussions and attendant eye contact that was often out of proportion to the content of the conversations.

Some conversations turned to politics. Anne-Thea McGill from New Zealand introduced Gale Warner to Dimitri from Moscow, who "wanted to meet an American." Dimitri had two burning questions. Why doesn't the US declare a policy against the first use of nuclear weapons, as the USSR has? And why is the US so vigorously pursuing Star Wars? His tone revealed that his aim was not to provoke controversy or score points; he sought to understand an unedited American viewpoint. "America is a great country," he said, "but I can't make any sense out of these policies."

I explained the American political system to three Czechs, who listened with rapt attention. They were amazed to hear that Congress can actually overrule the president. Having pictured the American peace movement as standing completely outside of and in opposition to a monolithic government totally controlled by the military and capitalists, they were surprised to hear that some

congressmen are closely allied with the peace movement.

Small pieces of information sometimes had unexpected impact on the students we met. The fact that we had independently organized our trip was mind-bending to them. One future pediatrician was shocked to hear that there really was no equivalent to Komsomol, the Young Communist League, in the United States. One Moscow student was taken aback by a beautiful photograph of Canyon de Chelly on the Navajo Reservation in Arizona; the Soviet press often obliquely equates US Indian reservations to Nazi concentration camps, complete with barbed wire. "Can the Indians leave the reservation?" he asked.

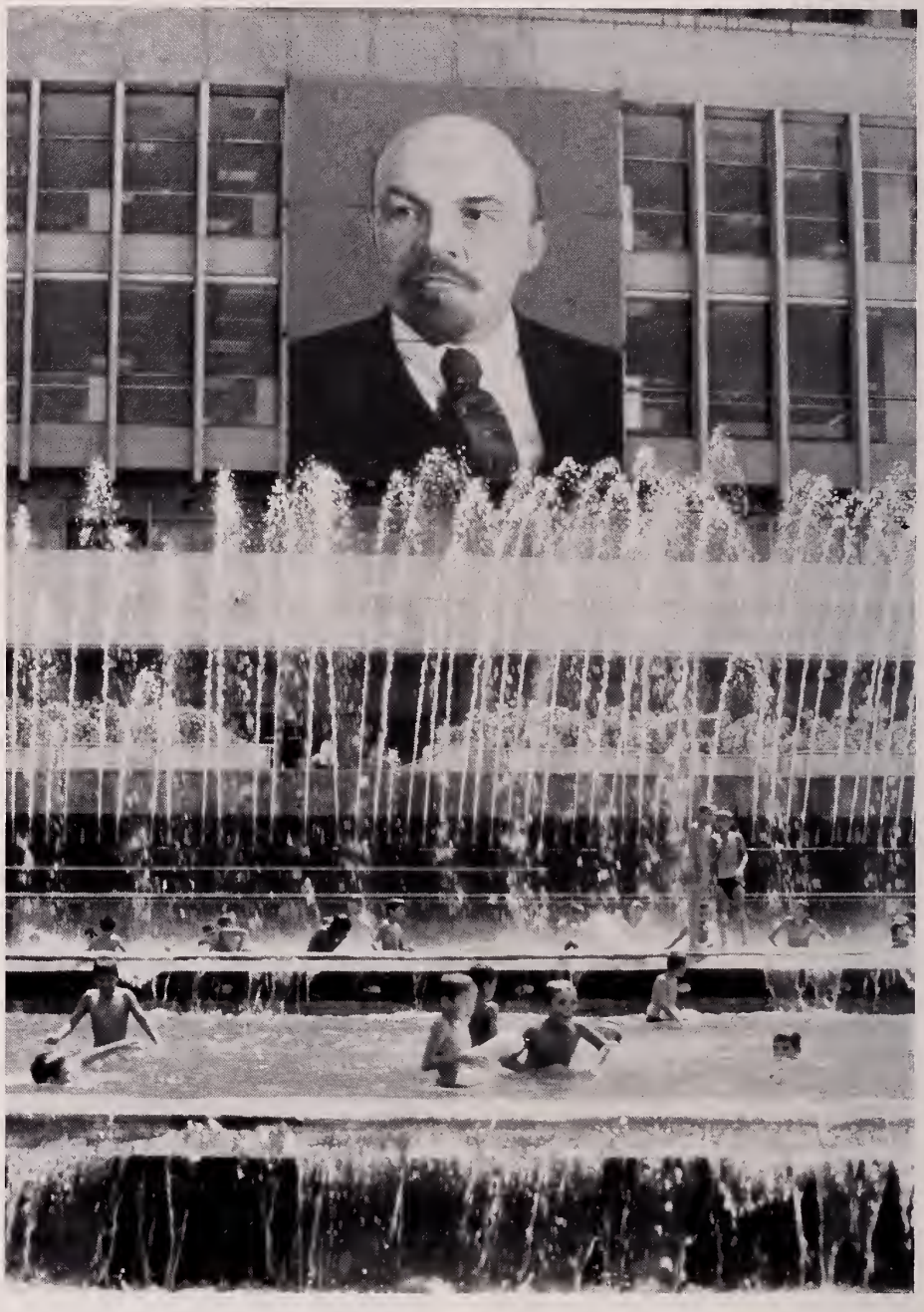
The next day we visited the Second Moscow Medical Institute. In the chemistry library we spotted a poster titled, "From Whence the Threat to Peace," with large color pictures of American weapons and a map showing a dark brown North America bristling with missiles bearing down on an innocently pink USSR. The biochemistry professor's polite speech was interrupted as we gawked and snapped photographs. "What, have you never seen pictures of American weapons?" teased our Intourist guide. We had, we assured her—what was fascinating was seeing them there.

About 40 students were waiting for us in a large auditorium; after welcoming speeches by a dean of the school and academician Galina Savalyeva (an active member of the Soviet branch of IPPNW), the dean said, "Now it is time for our informal discussion; are there any questions or comments?" His vision of an informal discussion was 70 people talking through one microphone!

Rob whispered to Savalyeva that we would prefer small group discussions; she nudged the dean. Moments later, he said: "Well, I think we've done enough talking about what we need to do. Why don't you students just start doing it? Make friends and save the world. You don't need us." He and the other administrators promptly filed out of the room, leaving us smiling at each other shyly. In a few minutes, conversations were going full swing.

During this mélée Jeff Rapp, from Philadelphia, spoke in Russian with several students who eventually invited him, and the rest of our group, to dinner the next night at their medical school-operated summer camp on the edge of Moscow.

The entire next day was unscheduled. That evening, about half our group rode the subway to the last stop, where we had arranged to meet



Uzbek children in a Tashkent fountain

the Russian students and ride with them on a bus to their camp. They met us on the subway platform, and we instantly knew something was up. Sveta and Dima began to speak rapidly in Russian with Jeff. The rest of us—eight Soviet and 10 American and Canadian medical students—waited to hear.

"There's a problem," Jeff explained. "They say their camp is just outside the 30-kilometer limit for foreigners, and we'd need special permission. So we can't go." They looked as disappointed as we did. Jeff suggested in Russian that we all go out to a nearby café or restaurant and talk. The students looked uncomfortable.

"We don't have time, because we have a lot of work to do at the camp and we have to get back," said Dima. We felt the gulf between us widening. "How about if we just go up to the street with them and take a look around?" an American suggested, and Jeff translated. "Of course," they said, and we headed up. Everyone seemed relieved to have a course of action. Meanwhile, nagging uncertainties set in. Did their supervisors tell them to disinvite us? Did they themselves change their minds?

We stood amidst the high-rise apartment buildings, weedy fields, and construction cranes that mark the outskirts of the city, next to a wide boulevard with cars and buses whizzing past. Jeff and the Soviet students came up with another idea, and soon the whole group headed down the sidewalk toward the city; our ostensible goal "to see the institute down the street." This metamorphosed into "seeing the university," which meant taking a bus ride for two stops and walking another mile.

All mention of "having to get back to work" faded as animated discussions erupted on all sides. We showed photographs, traded words of Russian and English, sang with the guitar that one American wore strapped over his shoulders. A serene 19-year-old woman named Lena told me she had studied the piano intensively at a high school that specialized in music before she decided to become a doctor. "What are your other interests?" I asked. "Poetry," she said. I gave her a copy of Gary Snyder's *Turtle Island.*

At one point we asked if we could sit down in a large open park with them to play the guitar. They suggested that we keep walking instead, and finally told us, "we just don't feel comfortable sitting down with you." We assumed they knew what was acceptable and where to draw the line. But they seemed almost as unsure as we were. They kept changing their minds, deciding to walk further with us. They had not been handed a rigid set of rules, it seemed; rather they were left to operate amidst a maze of tacit understandings.

We assumed the Soviet students knew where to draw the line. But they seemed almost as unsure as we were, operating in a maze of tacit understandings.

The next morning, we flew to Tashkent, the capital of Uzbekistan, near the borders of China and Afghanistan. In the kidney dialysis unit of the Tashkent Medical Institute, we asked our host what criteria were used to decide which patients get first priority access to dialysis machines. Our host said, "Everybody who needs dialysis gets dialysis." There certainly must be limited numbers of machines in the USSR, as there are in the West. But answering such a question honestly in public requires admitting an inadequacy to foreign strangers, who time and time again have ridiculed the Soviet system.

We met medical students in Tashkent at a "friendship society" meeting, and later went to an ice cream parlor and for a walk in a park. The Uzbek students seemed more relaxed than our former companions about being seen with foreigners in public. One of them, Elmira, spent the entire next day with three women from our group. Elmira loves Tashkent and could imagine living nowhere else. She was happy to show her city to her new American friends. She is proud of her Uzbek heritage, and appreciates the changes the revolution wrought in the status of women; she wants to become a pulmonary physiologist.

By the time we got to Kiev, we were feeling triumphant about the ways we had "beat the system." Not only had we managed to have plenty of informal conversation time with medical students, we had also met numerous Soviet citizens outside the medical community during our free time, and had spent several evenings in people's homes. A meeting with about 40 students at the Kiev Medical Institute soon brought us back to reality.

After several physicians and deans gave welcoming speeches, the Komsomol (Young Communist League) leader for the school, who was running the meeting, called up several of his classmates to give rather similar speeches (all of which had to be translated), and then invited one of us to speak. Rob gave a short speech emphasizing our desire to break into small groups and get to know one another.

The Komsomol leader motioned to another Soviet student to give a speech. Then he asked for another speech from the American side. We began to catch on: his idea of a medical student meeting was trading speeches *ad infinitum.* We—and many of the Soviet students—grew restless, and started introducing ourselves in whispers. Progressive anarchy ensued as the whispering became so loud that the speech-makers could barely be heard. Finally one of us stood up and explained so directly that we wanted to start making friends with one another on a personal level that the Komsomol leader had no choice but to dissolve the meeting's structure. Conversations broke out at full volume.

At last we had experienced some infamous Soviet inflexibility, and I, for one, was angry and frustrated. Why had this Komsomol guy wanted

HMS Students' Contribution to the Nobel Peace Prize

International Physicians for the Prevention of Nuclear War received the Nobel Peace Prize on December 10, 1985 (see Pulse). In November, after the prize was announced, James Muller, assistant professor of medicine at HMS and cardiologist at Brigham & Women's Hospital, told a group of HMS students about the contributions former students had made in forming and sustaining IPPNW in its early years. He was accompanied by Arthur Sparr, owner of Sparr's Drugstore. This piece is based on their talks.

Harvard and Soviet cardiologists Bernard Lown and Evgueni Chazov, longtime friends, first discussed the idea of IPPNW in Geneva in December 1980 after exchanging letters on the subject. At the meeting, Lown, Muller, and psychiatrist Eric Chivian '68 hammered out ground rules for the movement with Chazov and two other Russian physicians, Leonid Ilyin and Mikhail Kuzin. The six physicians decided that IPPNW would restrict its focus to nuclear war, without taking positions on the specific policies of any government; that members would act as physicians, not as politicians; and that information about IPPNW activities must be disseminated in both the East and the West.

When Lown, Muller, and Chivian returned from the historic meeting, they had "no money, no office, no equipment—nothing but a letter and an agreement with the Russian doctors," said Muller at his November talk. Engaged in their medical work, they didn't know where to turn for help with their new organization. Muller found himself caught between teaching pathophysiology at HMS and participating in IPPNW strategy meetings. Several students—including James Traver '82; Daniel Lowenstein, Virginia Mylo Schaaf, and Lachlan Forrow (all Class of '83); and Marcia Goldberg '84—offered their help.

Recognizing that Muller could not continue to handle IPPNW's correspondence out of his medical office, Traver approached Arthur Sparr. Sparr supplied IPPNW space above the drugstore rent-free for a few months. About 20 medical students spent many hours cleaning and painting the new office, which IPPNW rented for about two years. Then it moved into more spacious quarters in the old Boston Lying-In Hospital, where it remains.

In March 1981, IPPNW held its First International Congress near Washington, D.C., involving 70 physicians from 12 nations. A dozen HMS students did all the staff work for the congress, at which public lectures on the medical aspects of nuclear war were followed by working-group sessions on such topics as the role of physicians in the post-attack period and the social, economic, and psychological costs of the arms race.

The Russian doctors at the congress wanted to send a letter to Reagan and Brezhnev, but the Americans feared such an act would make IPPNW look like an outlaw group. "The Russian doctors said they hadn't come to Virginia to write a textbook on nuclear weapons," Muller told his audience. "They wanted to write to the people who had control."

The crisis was resolved at 4 A.M., when Lown, speaking for the American doctors, agreed that IPPNW should send a letter to Reagan and Brezhnev, asking the two leaders to preclude the use of nuclear weapons "in any form or on any scale."

The students stayed up all night preparing 100 copies of the final agreement between the Russian and American doctors to be handed out at a press conference in Washington that morning—feeding one page at a time into the only available photocopying machine, which kept breaking down. They finished just minutes before the group boarded buses for Washington to begin the briefing.

Not all student contributions have involved "scut work." Students did research for "The Nuclear-Arms Race and the Physician," a March 1981 *New England Journal of Medicine* article by Lown, Chivian, Muller, and Abrams.

Students also studied constitutions of various world movements and helped write the IPPNW constitution, which has contributed to the resolution of power struggles and such sticky questions as the relationship of Physicians for Social Responsibility (the United States organization) to IPPNW.

"Perhaps the students' most important contribution was their spirit," Muller recalled recently. "Their enthusiasm and hopefulness encouraged the more cynical and seasoned older physicians, who weren't sure the movement really had a chance."

In a 1983 Class Day speech, Bernard Lown addressed the issue of physician responsibility in the anti-nuclear war effort. "You can take pride," he told the Class of 1983, "in the fact that a number of the unsung heroes and heroines of the physician movement are members of this graduating class."

Student involvement continues: last year, Rob Saper '87 served as IPPNW medical student liaison; this year Andy Kanter deferred admission to HMS fill the same position. And David Kreger '87 and Saper helped found Medical Students for International Exchange, subject of the accompanying article. □

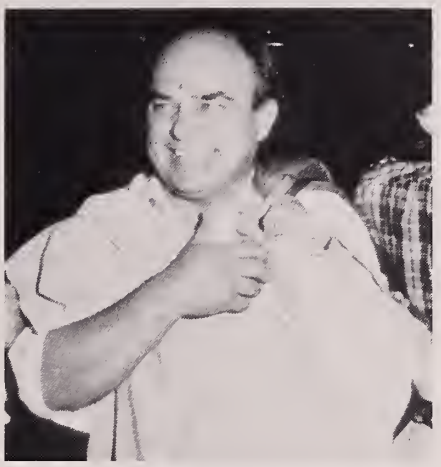
to waste so much time in speechmaking?

The next day we took a bus to the edge of town, to the Kiev Medical Institute's sports camp, operated by the institute for students, staff, and alumni of the institute. At last an agenda-less day to be with students! We played lively games of tag, soccer, and frisbee; we floated on a tributary of the River Dneiper in rowboats. We planted a "peace garden" of lilies, ate a sumptuous feast of traditional Ukrainian food, and talked and talked. One student was fascinated by the religions of the world he had studied in his required "atheism class," which resembles an academic comparative religions course—though, presumably, it debunks each in turn.

In a sunny meadow about 40 of us—half Soviet, half from the West—sat down in a circle with three guitars and Rob's saxophone and started trading Ukrainian folk songs for American jazz. After a few songs the Komsomol leader joined in the singing. I thought about the meeting the day before, and wondered what he thought of us. We must have made it terribly difficult for him while he stood before his school's administration, during his big chance to make a good impression. By this time I had heard that many students had prepared speeches for that meeting. One stayed up half the night translating the speech into English, but never had a chance to deliver it. The Komsomol leader had been trying to give his classmates a chance to give the speeches they had prepared.

I started thinking about *their* vision of citizen diplomacy. Ours is oriented toward individuals meeting individuals, a reflection of our Western society that stresses individual action and power. In the USSR, the emphasis is on collective organizations; individuals have little power. It is logical that they look at a "student meeting" as a chance to perform a courtship ritual between their student organization and ours.

By stubbornly pressing our vision and refusing to accept the validity of theirs, we had been as inflexible as they. For the first time, I saw this Komsomol leader not as cog in a



Dr. Kaidash, head of the Department of Cardiac Surgery at Vishnevsky Surgery Institute, wearing a gift: a scrub shirt from Beth Israel Hospital

senseless bureaucratic machine, but as a human being with a different way of looking at the world. It was quite a lesson. Still, the enormity of the differences between our systems, the lingering uncertainties about what constraints the students were under (none of the Kiev students agreed to meet us later), and the physical exhaustion of the trip discouraged me. What message were we bringing home?

Fortunately, my last day in the USSR helped me arrive at the bottom line: no differences between the United States and the Soviet Union can justify the stockpiling of nuclear weapons or the slightest chance that an accident or misunderstanding could set them off. I spent the day at the Kiev War Memorial with Kaidash, the cardiac surgeon, IPPNW member, and 23-year member of the Communist Party who had traveled with us to Tashkent and Kiev, and whom I had come to know well.

Gale and I split off from the tour with Kaidash to look at some modern weapons on display on the war memorial grounds. Among them was a gleaming white nuclear missile, with a sign giving its range as 2,000 kilometers. As we contemplated this vivid reminder of what had brought us to the Soviet Union, Kaidash told us about his experiences in World War II. When he was five years old, he spent two silent months in a cellar with his sister and mother, eating bits of bread that a 12-year-old neighbor boy gathered at night, and listening to the bombs.

Kaidash had trouble finding words to express his feelings standing beneath a Soviet nuclear missile with two young American friends. He picked up his satchel and pretended, in slow motion, to hurl it at the missile. Then he said, "We could get rid of all these, and nothing would happen." Countries would not suddenly start invading one another, he meant. The bombs serve no useful purpose other than to threaten the entire planet. As we left, he said, "My dream is for my 15-year-old twin sons to not have to go into the army."

Soon after we returned to the United States, one of the East German medical students we had met in Moscow wrote us a letter describing *Living on Another Planet*, a popular book about an East German's year in the US. "But in Moscow I felt that you are not from 'another planet,' " wrote our friend. "It was a good feeling and I become hungry to know much more about you and USA. I understood there is not only one 'Voice of America,' there are 200,000,000 voices of America. Now I will start to complete the USA puzzle. . . . You said many people believe we are hopelessly naive to try to protect world peace with contacts over the 'wall.' But it is the only chance for us." □

David Kreger can be contacted for speaking engagements or copies of the full report of the 1985 trip ($2.50) at 27 Inman Street, Cambridge, MA 02139. MSIE, under the auspices of IPPNW, is planning a second medical-student trip to the USSR for 1986. Plans are progressing for an East-West medical student study exchange program and a physician medical student trek in the Caucasus mountains. A pen pal program matching medical students from East and West was started at the IPPNW Congress in Budapest. Medical students interested in participating in these programs can contact Andy Kanter, current medical student liaison to IPPNW, 225 Longwood Ave., Boston, MA 02115.

A Christmas Past

by Joseph C. Placak Jr.

In Which a Young Physician Observes a Miracle on Fruit Street Involving FDR Jr. and Sulfa

During my surgical residency in 1937 at Phillips House, a private division of Massachusetts General Hospital, there was a small beach on the Boston side of the Charles River where boys from the North End came to swim and cavort in the water. Today Storrow Drive occupies the area between Phillips House and the river, and the beach has long since succumbed to the auto and truck traffic that thunders along the divided highway.

My room in Phillips House was the first to the left of the vestibule as one walked in the front door. In those days I could look across the river to the illuminated clock on the Carter Ink building to obtain the correct time.

As surgical resident I assisted at all operations, which were performed in the surgical suite on the top floor of the building. I also visited all the pre- and post-operative patients each evening to ascertain their progress and comfort.

On one of those evenings, while making rounds on the sixth floor, I walked into the room of Mark Hopkins Jr. As I approached his bed he looked up at me and said, "Say, Doc, I have Franklin D. Roosevelt on one side of me and Mrs. Paul Revere on the other. How long do you think it will be until they put Pocahontas across the hall?"

Franklin D. Roosevelt Jr. was indeed occupying the room to Hopkins's right. Franklin Jr., at that time a senior student at Harvard College, was hospitalized because of a serious streptococcus infection of a nasal passage and the adjacent maxillary sinus. In 1937 there were no antibiotic drugs to conquer such an infection. At times the infectious process would affect a blood vessel and cause a rather serious hemorrhage which resulted in the need for a blood transfusion.

On Christmas Day, Eleanor Roosevelt came to the hospital to visit her son. Young Franklin suffered another severe hemorrhage during his mother's visit. I decided another transfusion was necessary, and Mrs. Roosevelt immediately offered her blood. It was my duty to telephone the visiting surgeon in charge of the case; he told me to take a sample of her blood but find it incompatible. He did not wish to risk taking a pint of blood from the wife of the president.

I, of course, did as I was told and had a professional donor called. At about the same time, the telephone rang, announcing that a woman on the third floor was in labor and about to deliver. Since it was Christmas Day, her obstetrician was somewhere on Cape Cod and unable to return to Boston in time. Consequently, the surgical resident acted as accoucheur. The lady bore twins—my first multiple birth.

It was some time before I was able to return to Mrs. Roosevelt and apologize for my tardiness. She graciously informed me that she had had such a day in Washington the day before, looking after her grandchildren Sisty and Buzz Dall, together with numerous other interruptions. Her affability was so sincere that I was almost glad to be late and inform her that the blood I had taken from her did not match that of her son.

Several days later the hospital received a supply of a red liquid preparation from Winthrop Chemical Company labeled Prontosil. It was the first sulfanilamide to reach this country and was to be used experimentally for streptococcal infections. Franklin's physician learned of its arrival and decided to try it on his patient because the situation was becoming desperate and no other treatment had altered the course of the disease.

Young Franklin was given several doses of Prontosil; in 24 hours the streptococcus infection was conquered and complete recovery was assured.

It was the duty of the otolaryngologist in charge of Franklin's case to call the White House each night to report progress. He quickly told Mrs. Roosevelt that a new drug was being used on Franklin and that the infection had almost miraculously subsided. Mrs. Roosevelt then asked the name of the drug and apparently made a note of it on her telephone pad.

The following day, at Mrs. Roosevelt's customary news conference, one of the reporters queried her on the health of her son at the hospital in Boston. He was told that a new drug was in use which had "miraculously" conquered the infection. When he asked the name of the drug and was told it was Prontosil, the entire reportorial staff scribed the name on their pads. Papers that day throughout the nation contained articles about the drug despite the fact that no experimental work had been done on it. Sulfanilamide was prematurely launched, and demand for the preparation was enormous.

Soon afterward, it was discovered that pure sulfanilamide had deleterious side effects resulting in the formation of kidney stones. About the same time, researchers found that lowering the concentration of pure sulfanilamide by combining it with two other sulfa derivatives would obviate stone formation but still have a microbial killing effect on streptococci. Thus the use of so-called triple sulfa drugs came in vogue.

The discovery of sulfanilamide was soon followed by Sir Alexander Fleming's work on penicillin, and thus the discovery of the so-called miracle drugs was well upon its way. There are now about a score of sulfa preparations and almost as many "micins" added to the physician's armamentarium.

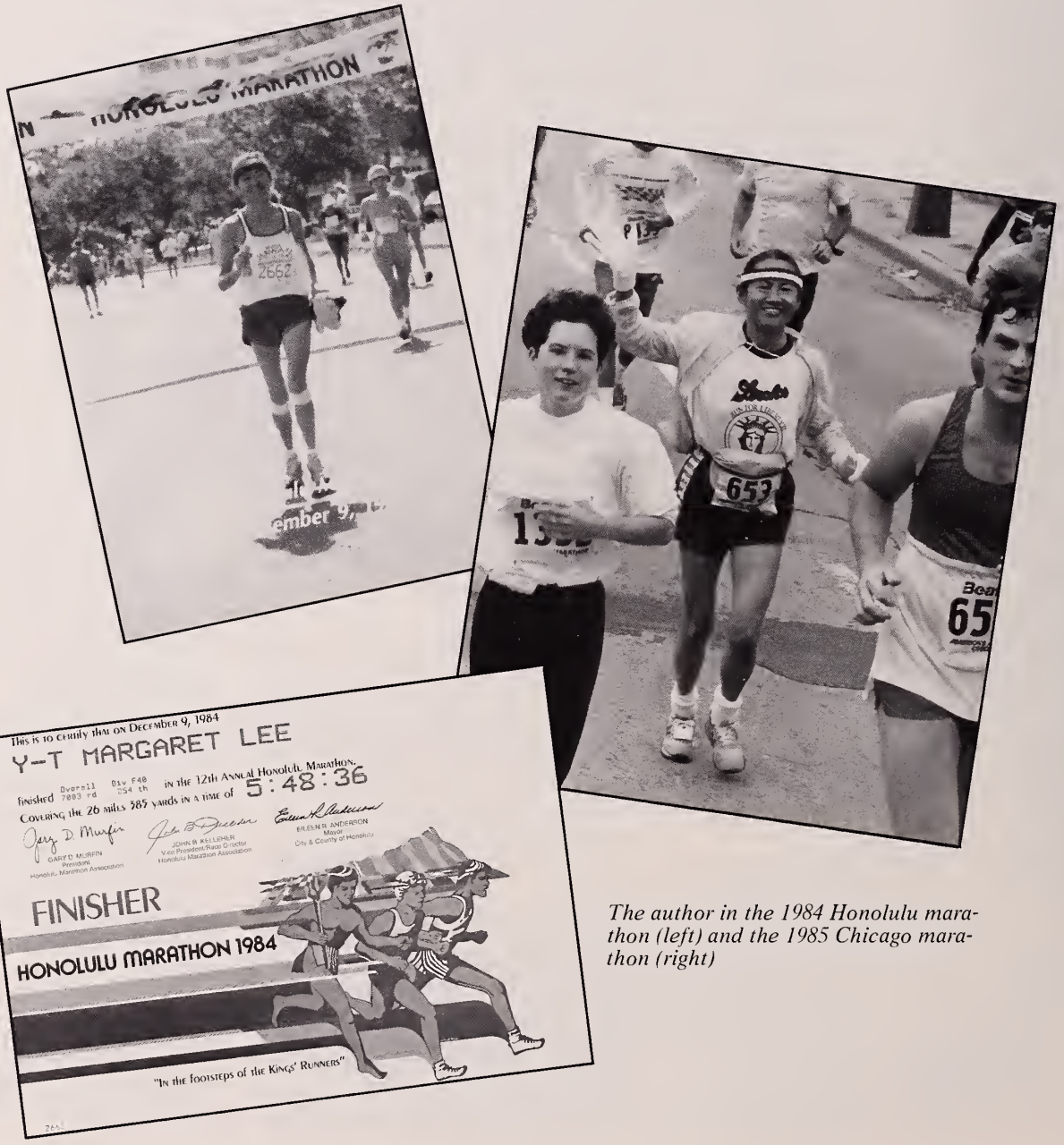
An amusing sequel to the story involves the visit of Mrs. Roosevelt to the South Pacific in about 1943. I was stationed in a naval hospital near Noumea in New Caledonia when the order was given to prepare for the visit of an important personage. The wards were all swept. (The corpsmen who aided in building the hospital had left the floorboards sufficiently separated so dust and debris could easily be ejected to the sand below by sweeping into the interspaces.) My ward dealt with chest surgery; in accord with orders, all the patients sufficiently well were lying at attention in their beds.

Soon after, in walked Admiral Halsey with Mrs. Roosevelt at his right side, along with the captain commanding the hospital and a coterie of lesser officers. No sooner had she entered the ward than she crossed it, extended her hand, and addressed me by name. I need not add that my reputation in the South Pacific was enhanced from that day on. □

Joseph C. Placak Jr. '33 is retired. He has an active interest in botany, particularly the chemistry of plant hormones, and is affiliated with Isothermal College.

How I Finished My First Marathon . . . After Age 40

by Yeu-Tsu N. Margaret Lee



The author in the 1984 Honolulu marathon (left) and the 1985 Chicago marathon (right)

Yeu-Tsu N. Margaret Lee '61 left her native China when she was 12 years old, "fleeing in front of the advancing Japanese," as she described it in her 1981 Alumni Day speech. After spending the next seven years in Taiwan, where she completed her first two years of college, she came to this country. Having overcome cultural differences and established herself as a successful surgical oncologist, she then set herself another goal: running the 1984 Honolulu marathon—when "the last race I had run had been in high school, about 30 years before." The following impressionistic account of running that marathon came to us from Lee with a recent alumni note.

Lee is chief of the surgical oncology section of the Department of Surgery at Tripler Army Medical Center, Honolulu. Since submitting this piece to the Bulletin, *she ran this year's Chicago marathon, finishing in five hours and seven minutes.*

In August 1983 I took a sabbatical leave from the University of Southern California, moved to Honolulu, and joined the Army. I was over 40 years old and had never done any regular exercise. I had to learn how to do push-ups and sit-ups. The last race I had run had been in high school, about 30 years before. When I tried to take the Army Physical Readiness Test three months after I joined, it took me 26 minutes to run two miles.

Many staff and resident physicians at Tripler Army Medical Center's Department of Surgery participate in the Honolulu marathon; some have run it for years. When the application forms were passed around the department during the summer of 1984, I decided to accept the challenge. By that time, I was taking aerobic dance and ice-skating lessons twice a week and running two miles three times a week.

"In order to finish the marathon," my boss, Peter Barcia, told me, "you need to run five miles a day, five days a week." I lengthened my running distance, always half jogging and half walking. On two Sundays I ran six miles or so along part of the marathon route. The day after Thanksgiving, I ran 13 miles, covering the last loop of Hawaii Kai in two and a half hours. Knowing the complete marathon course made me feel somewhat prepared.

In late November, I went to a meeting in San Antonio. I jogged up and down the Riverwalk, where the trees were decorated with Christmas lights. It was a great way to see a new city. When I changed planes in Los Angeles, I felt energetic running from one terminal to the other. The Wednesday before the marathon, I ran six miles to see *Running Brave*, an inspiring movie about Billy Mills, the 10-kilometer Olympic gold medalist of 1964.

December 9, 1984, was the big day of the 12th Honolulu marathon. I started running with a crowd of 8,828. After the first mile, I walked a bit and ran a bit. When we passed the public park, several men crossed in front of me to fertilize the trees. Men do have some advantages, while we women have to wait in lines. I made the first eight miles in 90 minutes. We passed a stage with hula dancers.

I kept on going. Slogans on runners' T-shirts kept up my interest: End World Hunger, Boston Marathon Finisher, Mahalo to Volunteers, Cardiac Marathoner, Group Tour from Japan, For the Young and the Young-at-Heart, Honeymooner. My shirt bore a map of the Hawaiian islands and the word "aloha." People wearing Santa Claus hats, bull-horn helmets, and headgear with pinwheels added festival flavor to the race. There were many runners from Japan, one of whom clicked along in wooden thongs. Some onlookers cheered me in Japanese. I just waved back.

To run against the 25- to 40-mile-per-hour gusty winds, I followed bigger and taller runners. (I'm five foot three and weigh 100 pounds.) I was really drafted! I ran beside 14 Marines in formation, clapping my hands with them at every fourth step, which had a hypnotic effect that kept me moving. They decided to take a break (poor fellows, they had to run with their combat boots on). I pressed on, because I knew if I sat down I wouldn't be able to get up again.

Near a highway bridge, people from the Crazy Shirt Company waved placards asking, "Are you in pain?" "Is it tough going?" I remembered the saying, "When the going gets tough, the tough get going." I covered 20 miles in four hours and 20 minutes. One runner's book said, "With 40 to 45 miles of training per week, you'll probably hit the wall at about 20 miles." Only if it was the Great Wall of China, I told myself, and then I would jog on top of it.

I passed Burger King on the right, and wondered where the McDonald's was. Which was closer to the finish line? In China, there is a saying, "If one wants to walk 100 miles, the halfway point is the 90th mile." I reached the 23rd mile mark. My legs were getting heavy and my quadriceps were aching. I walked backward to use different muscles. I pondered what Dr. Barcia had said to me at the beginning of the race: "I'm proud of you." I explained to myself what he meant was: "If you finish the marathon, I will be proud of you." Of course I would finish.

I made the 25-mile mark. By this time, I had passed several runners who were limping along. There was the smell of liniment in the air. I became more cautious and thanked God I didn't have even a blister. But I reminded myself that I would get credit for the next Army Physical Readiness Test only if I finished the marathon in under six hours. So I walked faster and felt grateful that it was the last mile.

I finished the 26.2 miles in five hours and 48 minutes. Did I feel exhausted? Not really. The next day I was in the operating room for eight hours, doing two operations, humming the marathon song: "Feeling good as we're running. Life again has begun . . . 26 miles is a long, long way to go." □

TRICKS, TRICKSTERS

by James A. FitzGerald

In the following excerpt from a novel in progress, an older physician, a widower, reflects back on his medical education as he lies in a hospital bed awaiting his own cardiac surgery. He has placed a call to a lady friend, but has heard nothing from her.

In his opinion, women were constituted differently than men, the members of his sex being inclined to be less reactive, less susceptible to the painless arrow directed straight to the heart. In his judgment, the female of the species represented the vulnerable gender. He remembered a time when he had exploited this womanly characteristic in the labor room, where he could count on a measure of peace from his ploy. He, the attending obstetrician, asking the undelivered woman, a creature in the throes of labor, "Do you want to wake up all the babies sleeping in the nursery?"—the question introduced in an interval between the woman's screams. He remembered the hurly-burly of the labor room subsiding, a returning quiet, except for the occasional murmurings of an irrepressible grunt and groan, the decibel count falling, some powerful motivation responsible for the laboring woman's accomplishment.

Still, there were those occasions when a woman could be unyielding, when a multifaceted Eve displayed an obdurate side. He recalled an example from 30 years before, a drama set in a Boston maternity hospital in staid, old New England. The audience comprised an assortment of interns and residents and a gaggle of medical students, located in one of the galleries of a hospital amphitheater.

The scene arrayed before them: an idle operating room, the site, this morning, of a clinical conference. Such a disposition of the area in no way exceptional, the arrangement one of convenience. The impressive theatrics of the setting: a sparseness, a pervasive sterility, from overhead the broad beam of an operating room light, a brightness bathing an operating room table. The professor of obstetrics from the university medical school astride the table. The professor of cardiology, from the same institution, standing to the left. The two distinguished physicians, both middle-aged men, poised facing a young woman seated in a wheelchair, every aspect of the patient exposed in the glare of the overhead light.

With the participants assembled, the members of the group occupying their places, the professor of obstetrics called the meeting to order. Raising his eyes to the gallery, he asked for quiet; a babbling of tongues respectfully faded away. Folding back the cover on the patient's chart, the obstetrician related, "Mrs. S. is 24 years old, married for five years, the mother of two children, the last child born in this hospital on . . ." Pausing in his account, turning over the pages in the document, the lecturer studied the content.

"My baby, a boy, a second son, came into this world on the 15th of August, 1950. The child was born on the Feast of the Assumption, eight weeks ago," the patient said, speaking up smartly, her words in an uncommon intonation. In a delicate maneuver, with one thin hand, she rearranged the blanket covering her legs.

"Sir, is your home a happy one?" the woman asked the cardiologist. "Is the dwelling resplendent, with the love of a child bringing a glow to the place?"

His face expressing a trace of annoyance, the professor of obstetrics declared, "The delivery took place on August 15th. A pregnancy complicated by recurrent bouts of rheumatic fever. The patient experienced intervals of congestive heart failure during the last trimester, and also at the time of delivery."

In a more intimate approach, addressing the patient, he said, "We would have lost you, Deidre, except for the intervention of . . ." The speaker turning toward his colleague, pointing a finger at the man, the cardiologist's name ready for the utterance.

"It was the Holy Mother who intervened on my behalf," the patient proclaimed, interrupting the lecturer, the acknowledgment quick on her tongue, the expression on her face beatific. Retrieving a string of beads from beneath the blanket, raising the offering up to heaven, her head inclined to the gallery, the woman turned her attention to the audience. "Boys," she said, "these beads came from the shrine at Lourdes, where the Holy Mother appeared to Bernadette. I want you to know I recite the rosary every day, thanking the Blessed Virgin for my recovery."

"Gentlemen, gentlemen," the professor of obstetrics cautioned the group on high, the admonition reaching to the rafters. A tittering gradually faded away.

Clearing his throat, folding his arms on his chest, the professor of cardiology took over the discussion. "Gentlemen," he said, "Mrs. S. suffers from a pronounced degree of mitral stenosis, the valve showing evidence of calcification by X ray. With her episodes of congestive failure she barely managed through this recent pregnancy. We have presented the facts of the case to her. We have given her time to consider the matter."

Approaching a conclusion, he said, "In view of the serious nature of her disease, we propose she plan no further childbearing. This woman will not survive another pregnancy; being with child will place her life in jeopardy. We recommend she have a tubal ligation. She is here today to tell us her decision."

Folding her hands cozily in her lap, the patient addressed the professor of cardiology. "Sir," she asked, "do you have a wee little girl dancing about your house? A dainty ballerina skipping and cavorting there? Sir," she inquired, "perhaps your home shelters a grown daughter? A young lady making her way as gracefully as any princess?"

The emigrant's brogue, now plainly manifest, contributed a lilt to her speech. "Sir, is your home a happy one?" she asked. "Is the dwelling resplendent? With the love of a child bringing a glow to the place?"

"What have you decided about the tubal ligation?" the professor of obstetrics demanded, a severity in his voice. "Your condition is stable at the present time. When will you have the operation?"

"Then, the truth is, you have no daughters," the woman said, speaking to the professor of cardiology, her eyes fixed appraisingly on the man. From the depths of her soul she

spoke, commiserating with him, saying, "And from the sad look on your face I can tell you have no sons. What a pity! You poor, afflicted creature.

"He deserves our prayers," she informed the occupants of the gallery, appealing to them with her hands uplifted, her face earnest.

Sitting up in their places expectantly, awaiting a denial of her allegations, they heard none.

Appearing disconcerted, the professor of obstetrics said, "We must return to the subject at hand." Composing himself, he asked the patient, "Have you discussed the nature of your surgery with your husband?"

"I have, indeed. Over a cup of tea, we talked," she replied.

"What did the man say?"

" 'Is it home baked?' my husband questioned me. This was in reference to the pound cake, a gift from a neighbor. 'Warm from her oven, as fresh as a daisy at dawn,' I told him. Seamus has a taste for sweets. He is a darling chap with a sugary disposition."

"What about the surgery?" the professor of obstetrics insisted, adamant, glowering at her.

The patient answered, "Seamus pondered over that. I can see him in my mind's eye, the golden crumbs scattered over his lips, distributed like little nuggets of the precious metal. And all this time he was thinking. Seamus is a great thinker," she related. "He's a bottomless man. At the end of his cogitation, he said, 'Do what the doctor orders.' He is an easy kind of fellow, Seamus is. You can lead him around by his nose."

"Then we have the man's approval for the procedure," the professor of obstetrics said, beaming in relief, raising his eyes triumphantly to the gallery.

"Yes, yes, at that point in time you did have his approval. But I wanted Seamus to be sure of his position. 'Will you very likely settle for two sons?' I inquired of him, with never a daughter to grace his house. 'How long will I be around to serve you?' I asked him, me, a declining woman no longer perpendicular in my petticoats. If we were going to have a third child, a girl this time, we should have her soon, I told my husband."

The professor of cardiology said, "In the event of a third pregnancy, the child could be one more boy." To the spectators in the gallery, the thoughtful expression on the man's face suggested a head full of statistics: given two sons in succession, what were the odds another pregnancy would result in a boy?

Indifferent to the rulings of chance, the patient said pertly, "If our third child is a boy, then we will try again till we have our girl." Addressing the gallery, she said, "One of these days my prayers will be answered."

"Your two sons need a mother to raise them, someone who will provide guidance to them in their formative years," the cardiologist advised her. "What we are concerned about is your longevity."

Holding his head between his hands, the cardiologist said, "Don't tell me you requested a priest to make a medical judgment. Have you actually done this?"

"I will live," the woman declared, "as long as the good Lord wills me to, not one day longer. Your pills and potions are fine. I thank you for them. Still," she concluded, "my life is in the hands of Our Divine Savior."

In a voice rich with practicality, the professor of cardiology asked, "Does your husband have the means to support a third child?" In the hush elicited by the personal nature of the question, the man paused in the interrogation, pushing back the tails of his white coat, the procedure bringing into display an ample waist. The rays of the overhead light glittered off a fat, yellow chain originating at his belt and ending in his trouser pocket. From one portion of the glowing linkage a Phi Beta Kappa key dangled. In the quiet of the room, he said, "Mrs. S., if you will, please answer my question."

In the silence, the patient sat pensive, searching for some source of inspiration, her fingers stroking a small wooden cross worn on a strand around her throat. Gathering her words, she spoke confidently. "Oh, what is one more mouth, and a small one at that. I don't think anyone in my family will ever go hungry. The good Lord above will provide. Did I tell you Seamus has been advanced in his position? Promoted from carrying a hod to the laying of bricks. Of course with a small increase in wages," she added.

"If there is any more commotion in the gallery, I will ask you to leave," the professor of obstetrics instructed the noisy gathering. A shuffling of feet replaced the laughter issuing from above, the obstetrician keeping a wary eye on the assemblage until quiet ensued.

Looking up, directing a broad grin to the responsive audience, the woman told its members, "You angels in heaven are in high humor this morning, you stalwarts of God up there with the cherubim and the seraphim. Turn around and let me see your shining wings," she asked them, a smile on her face, laughing quietly, the levity of the moment shared.

"Congratulate your husband on his achievement," the cardiologist said wryly, his mouth pursed. Returning to the subject under discussion, he asked, "What did the man say about your surgery?"

" 'It is a matter,' Seamus said, 'for a higher authority,' " the patient said, with a submissive expression.

"What higher authority?" the professor of obstetrics objected. "We are experts on the subject. Where can you find better advice?"

" 'Bring up the matter in the confessional,' my husband advised me. 'Discuss the problem with a priest'."

Holding his head between his hands, the cardiologist said, "Don't tell me you requested a priest to make a medical judgment. Have you actually done this?" he asked unbelievingly.

"On the first Friday of this month," the patient answered, "down on my knees, in the house of God, I asked for prayerful advice."

"And what were you told?" the professor of obstetrics inquired, his attitude despondent, his face pinched, the prospect of defeat imminent.

" 'Do what is best for your soul,' Father Rahilly said. For my penance I was required to say three Hail Marys

and one Our Father. I made a firm Act of Contrition."

"If you won't accept the tubal ligation, will you consider some other form of birth control?" the professor of obstetrics pleaded. From their view in the gallery, the spectators saw the man rubbing his hands together nervously, despair on his face.

With a quiet resolve, the patient stated her position. "That I cannot do; such a practice would place my soul at risk, with the prospect of an eternity to be spent in the fires of Hell." Beginning at her forehead with one hand, touching her breast, reaching to one shoulder, then to the other, the woman made the sign of the cross.

The cardiologist said, "Your husband could practice birth control. Perhaps he isn't as punctilious about his religion as you are." Pulling down the French cuffs on his shirt, he suggested, "The man could wear . . ."

Paying no heed to the proposal, the patient declared, "Even on a Sunday Seamus goes to church disheveled. Lint on his blue serge suit, breakfast stains on his best white shirt, all the drippings from a meal: drops of tea, little fragments of butter, a splattering of poached egg, all of it scattered over him here and there. And never an application of polish to his Sunday shoes," she protested. From its perch, the audience watched an indignation making its appearance on her face.

"During intercourse, during intercourse, it would help if your husband wore a device," the cardiologist elaborated.

"Oh, now I know what you are talking about," the patient admitted, her face frozen in a mask, her features fixed with the chill of the revelation. "You would have the man use the 'Yankee trick'."

With an ethnicity offended, speaking from an Olympian altitude, the cardiologist said, "I am not familiar with the expression 'the Yankee trick.' The device I refer to is called . . ."

"An instrument of the devil," the woman shouted. Collecting herself, she said, "It is what some heathen men use so their wives won't get pregnant. Am I right, boys?" she said knowingly, calling out to the gallery.

"Right on, right on," one of the group answered, then the other members joining in, repeating the phrase, their voices rising in a thunderous affirmation. The words borne on an admixture of sound, the result a tumultuous ovation: the noise of the clapping spreading enthusiastically, making its way through the peals of laughter, blending with the shouts, creating an exultant epiphany, sustained.

To the uproar the ingenue responded, distributing her kisses to the eager recipients, her hand floating them up one by one, wafting them on their way in a gentle, final benediction.

From the gallery, Dr. Jackson joined in the applause, clapping in appreciation for the sympathetic figure, his heart claimed by this antic Puck.

Oh, the magnificence of the scene, how well he, Dr. Jackson, remembered every detail of the extravaganza, the resident doctor, a witness, seeing the spectacle from his advantage on high: a grand finale, a Deidre bringing down the house, playing to the gallery.

No encore was permitted the luminary, despite the unremitting applause. The professor of obstetrics wheeled the comedienne out of the spotlight, relegating her to a place in the wings, the tragedienne returned to the obscurity of the shadows.

Even with her departure the tumult continued, in the acclaim a lasting tribute to her innocence, the ovation, in part, a raucous revelry acknowledging a triumph of hope over despair. The woman's show of ignorance forgotten, her naiveté easily dismissed.

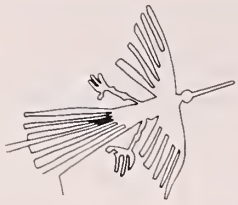
From his place in the gallery, Dr. Jackson joined in the applause, shouting his approval as loudly as any, clapping his hands in appreciation for the sympathetic figure, his heart claimed by this antic Puck. He shared with the rest of his companions a fevered state, a man throwing rationality to the winds.

NOW, IN HIS SICK BED, A DOCTOR made mature with time, with a wisdom conferred by experience, he reviewed her performance. The artless simplicity of her art. The flow of colorful language. The woman a baggage filled with tricks. Most of all, he admired her resolve. It was commendable to stand steadfast, but it was better to remain uncommitted and to be alive: the living Puck, rather than a Deidre of the Sorrows. Yes, he would pay her the honor due her, but he deplored her folly. This stubborn woman ravaged with rheumatic disease, who died in the course of her third pregnancy, her female infant, too, expiring. He supposed the woman's prayers were answered, in a fashion, by a God who moved in a mysterious way, who held little tricks and turns up His billowing sleeves. This strange God who allowed Deidre a daughter, then, in His infinite wisdom, permitted the mother and child to die.

Under the bedcovers he felt for his pulse, a pulse he did not find easily. Readjusting his fingers, he found the beat, an irresponsible mechanism fluttering away in asynchrony. A chill seized him. The arrythmia the result of his apprehension, he thought, his surgery imminent, threatening him, no more than hours away. Adding to his concern, there was the phone call he expected, from an instrument standing silent on the table. Hopefully, if he slept, a kindly sleep would restore the beat of his heart to a normal cadence. He adjusted his posture in bed, moving himself about in search of his ease. Drowsy from the sleeping pills, he was overtaken by an element of relaxation.

Perhaps he had awakened from a nightmare; this would account for his agitation. Settling himself down, he concluded that to be made distraught by a quick brain was lamentable. A lively mind could play all sorts of tricks on you. □

James FitzGerald '43A is the author of For Fear of Little Men, *a novel, and* Don Carlos and Other Stories, *a collection of short stories. He recently spent a sabbatical year at the University of Iowa, where he studied writing and taught obstetrics.*



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